4799

RENEWAL OF PERMITS TO OPERATE-THIRTEEN STORAGE TANKS-AT THE FEMP (OEPA) NO. 1431110128 T021, T022, T023, T024, T025, T026, T027, T102, T103, T104, T106, T107, T127

9/23/93

C:RP:93-0171 FERMCO/OEPA 60 PERMIT AP



34

Management Corporation P.O. Box 398704 Cincinnati, Ohio 45239-8704 (513) 738-6200

September 23, 1993

U. S. Department of Energy Fernald Environmental Management Project Letter No. C:RP:93-0163

Mr. Peter Sturdevant Compliance Specialist Hamilton County Department of Environmental Services Air Quality Management Division 1632 Central Parkway Cincinnati, Ohio 45210

Dear Mr. Sturdevant:

RENEWAL OF PERMITS TO OPERATE - THIRTEEN STORAGE TANKS - AT THE FERNALD ENVIRONMENTAL MANAGEMENT PROJECT (OEPA) NO. 1431110128 T021, T022, T023, T024, T025, T026, T027, T102, T103, T104, T106, T107, AND T127

Enclosed please find the renewal applications for the thirteen storage tanks at the FEMP for which the Permits to Operate are scheduled to expire. A check for \$195.00 is enclosed to cover the application fees.

Please contact Ervin Fisher of my staff at (513) 738-6053 if you have any questions about these applications.

Sincerely,

Kenneth L. Alkema

Vice President

Regulatory Programs

KLA:EF:mhv Attachments



Mr. Peter Sturdevant Letter No. C:RP:93-0163 Page 2

cc: S. M. Beckman, FERMCO - w/o attachments
R. W. Bischoff, FERMCO - w/o attachments
Robert Mendelsohn, DOE Contract Specialist
W. J. Quaider, DOE- FN
P. B. Spotts, FERMCO - w/o attachments
AR Coordinator)
PR Files
File Record Storage Copy 108.6

OHIO ENVIRONMENTAL PROTECTION AGENCY APPLICATION FOR A PERMIT TO OPERATE

AN AIR CONTAMINANT SOURCE D.O.E.-Fernald Environmental Management Mr. Stephen M. Beckman Facility Name Person to Contact Project Post Office Box 398704 7400 Willey Road Mailing Address Facility Address Hamilton 45030 45239-8705 Fernald <u>Cincinnati</u> OH City County Zip City State <u>513/ 738-6502</u> 513/ 738-6502 Telephone Telephone Area Number #1431110128-T021 (Application no., if this is a renewal application) 1. Complete and attach any of the following appendices most appropriate to the air contaminant source. In addition, a compliance time schedule form is to be attached when applicable. Check as appropriate the following: Appendix L. Solvent Metal Appendix A, Process _Appendix B, Fuel-Burning Equipment Cleaning Appendix C, Incinerator Appendix M, Fugitive Dust __Appendix D, Surface Coating or Emission Sources Printing Operation X Appendix E, Storage Tank
Appendix H, Gasoline Dispensing Specify Appendix No. _Appendix N, Rubber Tire Facility Manufacturing Appendix J, Loading Rack at Bulk Appendix O, Dry Cleaning Gasoline Plant or Facility Appendix P, Landfills Terminal Other Appendix Appendix K. Surface Coating Compliance Time Schedule Line or Printing Line Description of Source (same as used on appendix): Plant 2/3 Uranyl Nitrate Storage Tank D1-10 Your identification for Source (same as used on appendix): FEMP # 2-010 I, being the individual specified in Rule 3745-35-02(B) of the Ohio Administrative Code, hereby apply for a Permit to Operate the air contaminant source(s) described herein. As required, the following additional documents are submitted as part of this application (describe all attachments):

Authorized Signature

Kenneth L. Alkema

Vice President Regulatory Programs Title

Pursuant to OAC Rule 3745-35-02(B) (Permit to Operate).

Operation of an air contaminant source without an effective permit to operate is prohibited to 3704.05 Ohio Revised Code. Page 1 EPA-3161

FOR OFFICIAL USE ONLY	,
Premise No// Source No/	DOE - FEMP
Application No/APPENDIX E-2	(Facility Name) OEPA NO 1431110128 TO21 FEMP ID NO. 02-010
INORGANIC MATERIAL STORAGE TANK OR STORAGE TANK WITH CAPACITY LESS THAN 40,000 GAI	LLONS
1. Tank identification: Name or number D1-10 (FEMP 2-010) EP2-003	Date Installed <u>1952</u> (month/year)
2. Tank capacity: 3,300 gallons	
3. Tank shape: [X] Cylindrical [] Rectangular [] Other, specify	
4. Tank dimensions: Diameter Height Length	N/A Width N/A
5. Tank shell material: [] Steel [] Aluminum [X] Other, sp	pecify <u>Stainless Steel</u>
6. Type of tank: [] External floating roof tank [] Internal floating roof tank [X] Fixed roof tank [] Vertical cylindrical tank [] Horizontal cylindrical tank [] Pressure tank [] Other, specify	
7. Location of tank: [] Outdoors [X] Indoors	[] Underground
8. Type of filling: [X] Splash [] Submerged [] Other, s	pecify
9. If this tank is located outdoors and above ground, provide the pai	int color of the tank. N/A
[] Aluminum (specular) [] Light gray [] White [] Aluminum (diffuse) [] Medium gray [] Other,	specify
Condition of paint: [] Good [] Poor	
 If this tank is equipped with or vented to a vapor control system of this item. 	n, complete (a) through (c)
a) Type of vapor control system <u>Bubble Cap Tower</u> Manufacturer <u>Custom</u> Make or model Date installed (month and year) <u>1954</u>	N/A
b) Date tank was equipped with or vented to vapor control system	(month & year) <u>UNK</u>
c) Specify the rate of emission or percent control (by weight) controlled: NOX 88.9% (DATA PREVIOUSLY SUBMITTED) (Attach calculations and test data to support response, unless processing to the control of the control	

(Facility Name)
D1-10 (FEMP 2-010)
(tank identification)

	Type of Vent Valve	Pressure <u>Setting</u>	Vacuum Setting	If press <u>vapor contro</u>	ure relief 1, identify	is discharged the vapor con	to a <u>trol</u>
2.					all materi	als stored or	to be
	stored. Attach add			•	NI / A		
	a) Material <u>Uranyl</u> Density: <u>~9.0</u>	_ lbs/gal or _	- API	Producer	N/A		
	b) Temperature of st (If temperature i						
	c) Vapor pressure of is not known, wri		al (Complete	i, ii, iii of	this item.	If vapor pres	ssure
	i.) Actual vapor (Aqueous Solu essentially ii.) Reid vapor pr	water)					
	iii.) If material s			ed gas, provide	the pressu	ure at which it	;
	d) Type of liquid or gasoline, fuel oil, question below.)	ganic material kerosene, crud	(If the mat de oil, lubr	erial is an ordicant or other	ganic liquio petroleum	d <u>other</u> than a liquid, answer	the
	Is it a photochemic	ally reactive	material?	[] Yes [X] No		
	e) Type of waste mat	erial (If the m	naterial is	a waste, answei	r the quest	ion below.)	
	Is it a hazardous w If yes, identify ty			mber)	· 		•
	f) Indicate the year	(or 12-month	period) for	item (g):	1987		
	g) Annual throughput	of material: _	600,000	g	allons.	. •	•
	oleted by <u>Ervin Fis</u>	han In			Nate Au	ıq. 17, 1993	

V 1

Storage Tank Emission Report Thursday, September 16 1993

10:25 AM

```
---- Tank Characteristics ----
Identification
   Identification No.:
                            T021
   City:
                            Dayton
                            Ohio
   State:
                            DOE FEMP
   Company:
Input Parameters
                            Vertical Fixed Roof
   Type of Tank:
Tank Dimensions
                                    12
   Shell Height (ft):
                                     7
   Diameter (ft):
                                    12
   Liquid Height (ft):
                                  3300
   Volume (gallons):
                                   180
   Turnovers:
                                600000
   Net Throughput (gal/yr):
Roof Characteristics
   Roof Type:
                             Cone
                             0.000
   Roof Height (ft):
   Slope (ft/ft):
                           0.00000
   Dome Radius (ft):
                              0.00
Paint Characteristics
   Shell Color/Shade:
                            Aluminum/Specular
   Shell Condition:
   Roof Color/Shade:
                            Aluminum/Specular
   Roof Condition:
                            Good
Breather Vent Settings
   Vacuum Setting(psig):
                             0.00
   Pressure Setting(psig):
                            0.00
--- Storage Tank Contents Temperature Data ----
Daily Average Ambient Temperature (Degrees Fahrenheit) =
                                                                  51.90
Daily Minimum Ambient Temperature (Degrees Fahrenheit) =
                                                                  42.30
Daily Maximum Ambient Temperature (Degrees Fahrenheit) =
                                                                  61.50
                                                                 19.20
Daily Ambient Temperature Range =
                                                               1160.00
Solar Insolation Factor =
Alpha (Shell) =
                                                                  0.39
                                                                  0.39
Alpha (Roof) =
                                                                  53.24
Liquid Bulk Temperature (Degrees Fahrenheit) =
Average Liquid Surface Temperature (Degrees Fahrenheit) =
                                                                  56.22
                                                                  62.84
Daily Maximum Liquid Surface Temperature (Degrees Fahrenheit) =
Daily Minimum Liquid Surface Temperature (Degrees Fahrenheit) =
                                                                 49.60
                                                                 26.49
Daily Vapor Temperature Range =
--- Storage Tank Vapor Pressure Information ----
```

Speciation Option: None

۲,

Chemical Liquid: Uranyl Nitrate

Vapor Pressure of total mixture = 0.227238
Minimum Vapor Pressure of total mixture = 0.175816
Maximum Vapor Pressure of total mixture = 0.287205
Vapor Molecular Weight of Mixture = 18.000000
Vapor pressure range = 0.111389

---- Storage Tank Standing Loss Information (AP-42) ---Roof Outage = 0.00
Vapor Space Outage = 0.00
Vapor Space Volume = 0.00
Vapor Density = 0.0007
Breather Vent Range = 0.000000
Vapor Space Expansion Factor = 0.044914
Vented Vapor Saturation Factor = 1.000000
Total Standing Losses = 0.00

---- Storage Tank Working Loss Information (AP-42) ---Net Throughput (gal/year) = 600000
Liquid Volume (cubic feet) = 462
Turnovers = 174
Turnover Factor = 0.3394
Working Loss Product Factor = 1.00
Total Working Losses = 19.83

---- Storage Tank Total Losses (AP-42) ----Total losses = 19.83 lbs/year 479 9

URANIUM EMISSIONS

The calculations for uranium emissions are based on known data where possible and where data for parameters is unknown or incomplete, conservative values producing a "worst case" condition for emissions are used.

The conditions used to determine uranium emissions from the tank are as follows:

- (1) At typical tank pressures and temperatures, the vapor pressure of the Uranyl Nitrate solution is equal to that of water.
- (2) Since uranium does not vaporize at storage conditions the only mechanism for uranium loss from the tank is by entrainment in the aerosol or mist generated during liquid storage and transfer.
- (3) Uranium emissions are determined by multiplying the amount of water lost from the tank by entrainment in the aerosol or mist generated during liquid storage and transfer by an emission factor determined from laboratory tests conducted on Lab sample D-37, Lab #2-9846.
- (4) The emission factor has been determined to be 6 x 10^{-06} gU/l of solution; the maximum concentration of uranium entrained in the vapor from a boiling solution of 9% uranyl nitrate as determined by the laboratory tests.
- (5) Maximum emissions are five times the calculated annual emissions.

These calculations are based on conservative estimates, the actual emissions are expected to be less than those indicated.

Maximum Emissions: 1.19 E-7 lb U/year x 5 = 5.95 E-7 lb U/year

OHIO ENVIRONMENTAL PROTECTION AGENCY APPLICATION FOR A PERMIT TO OPERATE AN AIR CONTAMINANT SOURCE

479 9

D.O.EFernald En Facility Name	<u>vironmental Management</u> <u>Project</u>	Mr. Stephen M. Beckman Person to Contact
7400 Willey Road Facility Address	· · · · · · · · · · · · · · · · · · ·	Post Office Box 398704 Mailing Address
	ilton 45030 County Zip	Cincinnati OH 45239-8705 City State Zip
Telephone	513/ 738-6502 Area Number	513/ 738-6502
(Application no.,	#1431110128-T022 if this is a renewal appl	ication) Std. Ind. Class. Code
air contaminar be attached wi AppendixAppendixAppendixX_AppendixAppendixAppendixAppendixAppendix	nt source. In addition, a nen applicable. Check as A, Process B, Fuel-Burning Equipment C, Incinerator D, Surface Coating or Printing Operation E, Storage Tank H, Gasoline Dispensing Facility J, Loading Rack at Bulk Gasoline Plant or Terminal K, Surface Coating Line or Printing Line	Appendix M, Fugitive Dust Emission Sources Specify Appendix No. Appendix N, Rubber Tire Manufacturing Appendix O, Dry Cleaning Facility Appendix P, Landfills Other Appendix Compliance Time Schedule appendix): Plant 2/3 Uranyl Nitrate
		Storage Tank D1-11 sused on appendix): FEMP #2-011
Administrative source(s) desc	e Code, hereby apply for a I ribed herein. As required as part of this applicati	n Rule 3745-35-02(B) of the Ohio Permit to Operate the air contaminant I, the following additional documents on (describe all attachments): Authorized Signature Kenneth L. Alkema Vice President Regulatory Programs Title 9133/93 Date

*Pursuant to OAC Rule 3745-35-02(B) (Permit to Operate).

Operation of an air contaminant source without an effective permit to operate is prohibited to 3704.05 Ohio Revised Code. Page 1 EPA-3161

FOF	R OFFICIAL USE ONLY
Pre Sou App	emise No//
	INORGANIC MATERIAL STORAGE TANK OR STORAGE TANK WITH CAPACITY LESS THAN 40,000 GALLONS
1.	Tank identification: Name or number D1-11 (FEMP 2-011) Date Installed 1952 (month/year)
2.	Tank capacity: 3,300 gallons
3.	Tank shape: [X] Cylindrical [] Rectangular [] Other, specify
4.	Tank dimensions: Diameter 7' Height 11'6" Length N/A Width N/A
5.	Tank shell material: [] Steel [] Aluminum [X] Other, specify Stainless Steel
6.	Type of tank: [] External floating roof tank [] Internal floating roof tank [X] Fixed roof tank [] Vertical cylindrical tank [] Horizontal cylindrical tank [] Pressure tank [] Other, specify
7.	Location of tank: [] Outdoors [X] Indoors [] Underground
, o	Type of filling: [X] Splash [] Submerged [] Other, specify
ŷ.	If this tank is located outdoors and above ground, provide the paint color of the tank. !
	[] Aluminum (specular) [] Light gray [] White [] Aluminum (diffuse) [] Medium gray [] Other, specify
	Condition of paint: [] Good [] Poor
10.	If this tank is equipped with or vented to a vapor control system, complete (a) through of this item.
	a) Type of vapor control systemBubble Cap Tower

0009

Manufacturer ____Custom_

Date installed (month and year) ____1954

1 of 2

c) Specify the rate of emission or percent control (by weight) for any pollutants be controlled: NOx 88.9% (DATA PREVIOUSLY SUBMITTED)

(Attach calculations and test data to support response, unless previously submitted)

b) Date tank was equipped with or vented to vapor control system (month & year) <u>UNK</u>

Make or model

N/A

Type of Vent Valve	Pressure Va <u>Setting Sett</u>	icuum If <u>ing vapor</u>	pressure rel control, iden	lief is discharged tatify the vapor cont	:o a :rol.
		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	
Operational Data (c stored. Attach add	omplete (a) through		em for all ma	aterials stored or	to be
a) Material <u>Uranyl</u> Density: <u>~9.0</u>	Nitrate _ lbs/gal or	Trade • API Produce	NameN/	N/A A	
b) Temperature of st (If temperature i	ored material: Ave s approximately out				
c) Vapor pressure of is not known, wri	stored material (C te "unknown"):	omplete i, ii,	iii of this i	item. If vapor pre	ssure
i.) Actual vapor (Aqueous Solu	pressure: $0.$	23 psia a 29 psia a	t average sto t maximum sto	rage temperature rage temperature	
essentially ii.) Reid vapor pr		psi and min	nimum-maximum	n psi	
iii.) If material s is stored:	tored is a gas or l psi gage at		rovide the pr	ressure at which it	
d) Type of liquid or gasoline, fuel oil, question below.)					the
Is it a photochemic	ally reactive mater	ial? [] Yes	[X] No		
e) Type of waste mate	erial (If the mater	ial is a waste,	answer the q	uestion below.)	
Is it a hazardous w If yes, identify ty	aste? [] yes [pe (EPA hazardous w] No aste number)			
f) Indicate the year	(or 12-month perio	od) for item (g)	: 198	7	
g) Annual throughput	of material: 600	,000	gallons.		

Storage Tank Emission Report Thursday, September 16 1993

10:25 AM

Tank Characteristics Identification		
Identification No.:	T022	
City: State:	Dayton Ohio	
Company:	DOE FEMP	
Input Parameters Type of Tank:	Vertical Fixed Roof	
Tank Dimensions Shell Height (ft):	12	
Diameter (ft): Liquid Height (ft):	7 12	
Volume (gallons):	3300	
Turnovers: Net Throughput (gal/yr)	180 : 600000	
• • • • • • • • • • • • • • • • • • • •		
Roof Characteristics Roof Type:	Cone	
Roof Height (ft):	0.000 0.00000	
Slope (ft/ft): (Dome Radius (ft):	0.00	
Paint Characteristics	A1	
Shell Color/Shade: Shell Condition:	Aluminum/Specular Good	*
Roof Color/Shade:	Aluminum/Specular Good	
Roof Condition:	6000	
Breather Vent Settings Vacuum Setting(psig):	0.00	
Pressure Setting(psig):	0.00	
Storage Tank Contents		51.90
	erature (Degrees Fahrenheit) = 4	2.30
Daily Maximum Ambient Temperature F		31.50 3.20
Solar Insolation Factor =	1160	00.0
Alpha (Shell) = Alpha (Roof) =).39).39
Liquid Bulk Temperature (De	egrees Fahrenheit) = 5	3.24
		6.22
Daily Minimum Liquid Surfac	ce Temperature (Degrees Fahrenheit) = 4	9.60
Daily Vapor Temperature Rar	ige = 20	5.49 ·
Storage Tank Vapor Pre	essure Information	

Thursday, September 16 1993 Storage Tank Emission Report Page 2

4799

Speciation Option: None Chemical Liquid: Uranyl Nitrate

Vapor Pressure of total mixture = 0.227238
Minimum Vapor Pressure of total mixture = 0.175816
Maximum Vapor Pressure of total mixture = 0.287205
Vapor Molecular Weight of Mixture = 18.000000
Vapor pressure range = 0.111389

---- Storage Tank Standing Loss Information (AP-42) ---Roof Outage = 0.00
Vapor Space Outage = 0.00
Vapor Space Volume = 0.00
Vapor Density = 0.0007
Breather Vent Range = 0.000000
Vapor Space Expansion Factor = 0.044914
Vented Vapor Saturation Factor = 1.000000
Total Standing Losses = 0.00

---- Storage Tank Working Loss Information (AP-42) ---Net Throughput (gal/year) = 600000
Liquid Volume (cubic feet) = 462
Turnovers = 174
Turnover Factor = 0.3394
Working Loss Product Factor = 1.00
Total Working Losses = 19.83

---- Storage Tank Total Losses (AP-42) ---- Total losses = 19.83 lbs/year

.

URANIUM EMISSIONS

The calculations for uranium emissions are based on known data where possible and where data for parameters is unknown or incomplete, conservative values producing a "worst case" condition for emissions are used.

The conditions used to determine uranium emissions from the tank are as follows:

- At typical tank pressures and temperatures, the vapor pressure of the (1)Uranyl Nitrate solution is equal to that of water.
- Since uranium does not vaporize at storage conditions the only mechanism (2) for uranium loss from the tank is by entrainment in the aerosol or mist generated during liquid storage and transfer.
- Uranium emissions are determined by multiplying the amount of water lost (3)from the tank by entrainment in the aerosol or mist generated during liquid storage and transfer by an emission factor determined from laboratory tests conducted on Lab sample D-37, Lab #2-9846.
- The emission factor has been determined to be 6 x 10^{-06} qU/l of solution: (4) the maximum concentration of uranium entrained in the vapor from a boiling solution of 9% uranyl nitrate as determined by the laboratory tests.
- Maximum emissions are five times the calculated annual emissions. (5)

These calculations are based on conservative estimates, the actual emissions are expected to be less than those indicated.

Annual Emissions:

19.83 | b water | 6 x 10^{-06} | b U | = 1.19 E-7 | b U/year

year

1000 lb water

Maximum Emissions:

1.19 E-7 1b U/year x 5 = 5.95 E-7 1b U/year

OHIO ENVIRONMENTAL PROTECTION AGENCY APPLICATION FOR A PERMIT TO OPERATE AN AIR CONTAMINANT SOURCE

479 9

D.O.EFernald E	<u>nvironmental</u>	Management	Mr. Stephen	M. Beckman
Facility Name		<u>Project</u>	Person to C	
7400 Willey Road			Post Office	Box 398704
Facility Address			Mailing Add	
_ 5.1				
	milton County	45030	<u>Cincinnati</u>	OH 45239-8705
City	Country	Zip	City	State Zip
	513/ 73			513/ 738-6502
Telephone	Area	Number	Telephone	
	#1431110	128-T023		4953
(Application no.	, if this is	a renewal appl	ication)	Std. Ind. Class. Code
air contamina be attached w AppendiAppendiAppendiAppendiAppendiAppendiAppendiAppendi	ant source. when applical x A, Process x B, Fuel-Bu x C, Inciner x D, Surface Printing x E, Storage x H, Gasolin Facility x J, Loading Gasoline Terminal x K, Surface	In addition, a ble. Check as rning Equipment ator Coating or Operation Tank e Dispensing Rack at Bulk Plant or Coating	compliance ti appropriate thAppendixAppendixAppendixAppendixAppendixAppendixAppendixAppendixAppendix	L, Solvent Metal Cleaning ix M, Fugitive Dust Emission Sources Specify Appendix No. N, Rubber Tire Manufacturing O, Dry Cleaning Facility P, Landfills
2. Description o		Printing Line ame as used on	•	ce Time Schedule int 2/3 Uranyl Nitrate
				Storage Tank F1-1 ndix): <u>FEMP # 2-012</u>
Administrativ source(s) des	e Code, here cribed herei	by apply for a f n. As required this applicati	Permit to Opera, the following on (describe a Authorized S	Alkema nt Regulatory Programs

*Pursuant to OAC Rule 3745-35-02(B) (Permit to Operate).

Operation of an air contaminant source without an effective permit to operate is prohibited to 3704.05 Ohio Revised Code. Page 1 EPA-3161

	erm (Miller of the Control of the Co
FO	OR OFFICIAL USE ONLY
Pr So Ap	remise No//
	INORGANIC MATERIAL STORAGE TANK OR STORAGE TANK WITH CAPACITY LESS THAN 40,000 GALLONS
1.	Tank identification: Name or number $F1-1$ (FEMP 2-012) Date Installed 1952 EP2-004 (month/year
2.	Tank capacity: 3,300 gallons
3.	Tank shape: [X] Cylindrical [] Rectangular [] Other, specify
4.	Tank dimensions: Diameter <u>7'6"</u> Height <u>10'</u> Length <u>N/A</u> Width <u>N/A</u>
5.	Tank shell material: [] Steel [] Aluminum [X] Other, specify <u>Stainless Steel</u>
6.	Type of tank: [] External floating roof tank [] Internal floating roof tank [X] Fixed roof tank [] Vertical cylindrical tank [] Horizontal cylindrical tank [] Pressure tank [] Other, specify
7.	Location of tank: [] Outdoors [X] Indoors [] Underground
٠	Type of filling: [X] Splash [] Submerged [] Other, specify
9.	If this tank is located outdoors and above ground, provide the paint color of the tank.
	[] Aluminum (specular) [] Light gray [] White [] Aluminum (diffuse) [] Medium gray [] Other, specify
	Condition of paint: [] Good [] Poor
10.	If this tank is equipped with or vented to a vapor control system, complete (a) through of this item.

0015

Manufacturer ___Custom

a) Type of vapor control system _____

Date installed (month and year) ____1954

controlled: NOx 88.9% (DATA PREVIOUSLY SUBMITTED)

b) Date tank was equipped with or vented to vapor control system (month & year) <u>UNK</u>

(Attach calculations and test data to support response, unless previously submitted)

c) Specify the rate of emission or percent control (by weight) for any pollutants be

Bubble Cap Tower

Make or model

 $\begin{array}{c|c} \underline{\text{DOE}} - \underline{\text{EMP}} & 4799 \\ \hline \text{(Facility Name)} \\ \underline{\text{F1-1}} & \text{(FEMP 2-012)} \\ \text{(tank identification)} \end{array}$

	Type of Vent Valve	Pressure <u>Setting</u>			elief is discharged to identify the vapor con	
2.	Operational Data (stored. Attach ad				ll materials stored or	to be
	a) Material <u>Urany</u> Density: <u>~9.0</u>	Nitrate lbs/gal or		Trade Name Producer	N/A N/A	
				AMB •F and Maximombient temperature		•
	c) Vapor pressure o is not known, wr			ce i, ii, iii of t	his item. If vapor pre	ssure
	essentially	water)			e storage temperature m storage temperature ximum psi	
	iii.) If material is stored:			ied gas, provide t	he pressure at which it	
,					nic liquid <u>other</u> than a etroleum liquid, answer	
	Is it a photochemi	cally reactiv	e material?	[] Yes [X]	No	
	e) Type of waste mat	erial (If the	e material is	a waste, answer t	he question below.)	
	Is it a hazardous v If yes, identify ty	vaste? [] ; /pe (EPA haza	yes [] No rdous waste n	umber)		
	f) Indicate the year	or 12-mont	th period) fo	r item (g):	1987	
	g) Annual throughput	a.f	600 000	gall		

Storage Tank Emission Report Thursday, September 16 1993

10:26 AM

Identification Identification No.: City: State: Company:	T023 Dayton Ohio DOE-FEMP
Input Parameters Type of Tank:	Vertical Fixed Roof
Tank Dimensions Shell Height (ft): Diameter (ft): Liquid Height (ft): Volume (gallons): Turnovers: Net Throughput (gal/yr)	10 8 9 3300 182 : 600000
Roof Characteristics Roof Type: Roof Height (ft): Slope (ft/ft): Dome Radius (ft):	Cone 0.000 0.00000 0.00
Paint Characteristics Shell Color/Shade: Shell Condition: Roof Color/Shade: Roof Condition:	Aluminum/Specular Good Aluminum/Specular Good
Breather Vent Settings Vacuum Setting(psig): Pressure Setting(psig):	0.00 0.00
Daily Minimum Ambient Temporally Maximum Ambient Temporally Ambient Temporature (Solar Insolation Factor = Alpha (Shell) = Alpha (Roof) = Liquid Bulk Temporature (De Average Liquid Surface Temporature (De Average	erature (Degrees Fahrenheit) = 51.90 erature (Degrees Fahrenheit) = 42.30 erature (Degrees Fahrenheit) = 61.50 Range = 19.20 1160.00 0.39 0.39
Daily Minimum Liquid Surface Daily Vapor Temperature Rai	ce Temperature (Degrees Fahrenheit) = 49.60 nge = 26.49
Storage lank vapor Pro	essure Information

--- Tank Characteristics ----

4799

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Speciation Option: None
Chemical Liquid: Uranyl Nitrate
```

Vapor Pressure of total mixture =	0.227238
Minimum Vapor Pressure of total mixture =	0.175816
Maximum Vapor Pressure of total mixture =	0.287205
Vapor Molecular Weight of Mixture =	18.000000
Vapor pressure range =	0.111389

--- Storage Tank Standing Loss Information (AP-42) ----0.00 Roof Outage = 1.00 Vapor Space Outage = Vapor Space Volume = 50.27 0.0007 Vapor Density = Breather Vent Range = 0.000000 Vapor Space Expansion Factor = 0.044914 Vented Vapor Saturation Factor = 0.988100 0.60 Total Standing Losses =

---- Storage Tank Working Loss Information (AP-42) ---Net Throughput (gal/year) = 600000
Liquid Volume (cubic feet) = 452
Turnovers = 177
Turnover Factor = 0.3359
Working Loss Product Factor = 1.00
Total Working Losses = 19.63

---- Storage Tank Total Losses (AP-42) ----Total losses = 20.23 lbs/year

URANIUM EMISSIONS

The calculations for uranium emissions are based on known data where possible and where data for parameters is unknown or incomplete, conservative values producing a "worst case" condition for emissions are used.

The conditions used to determine uranium emissions from the tank are as follows:

- (1) At typical tank pressures and temperatures, the vapor pressure of the Uranyl Nitrate solution is equal to that of water.
- (2) Since uranium does not vaporize at storage conditions the only mechanism for uranium loss from the tank is by entrainment in the aerosol or mist generated during liquid storage and transfer.
- (3) Uranium emissions are determined by multiplying the amount of water lost from the tank by entrainment in the aerosol or mist generated during liquid storage and transfer by an emission factor determined from laboratory tests conducted on Lab sample D-37, Lab #2-9846.
- (4) The emission factor has been determined to be 6 x 10^{-06} gU/l of solution; the maximum concentration of uranium entrained in the vapor from a boiling solution of 9% uranyl nitrate as determined by the laboratory tests.
- (5) Maximum emissions are five times the calculated annual emissions.

These calculations are based on conservative estimates, the actual emissions are expected to be less than those indicated.

Annual Emissions:

20.23 lb water $| 6 \times 10^{-06} |$ lb U | = 1.21 E-7 | lb U/year

year

r | 1000 1b water

Maximum Emissions:

1.21 E-7 lb U/year x 5 = 6.07 E-7 lb U/year

OHIO ENVIRONMENTAL PROTECTION AGENCY APPLICATION FOR A PERMIT TO OPERATE AN AIR CONTAMINANT SOURCE

4799

D.O.EFernald Er	<u>ıvironmental</u>		Mr. Stephen		
Facility Name		<u>Project</u>	Person to C	ontact	
7400 Willey Road			Post Office	Box 398704	
Facility Address			Mailing Add	ress	
Fernald Ham	nilton	45030	Cincinnati	OH	<u>45239-8705</u>
City	County	Zip	City	State	Zip
	513/ 73			513/ 7	38-6502
Telephone	Area	Number	Telephone		
		128-T024		4953	
(Application no.,	if this is	a renewal appl	ication)	Std. Ind.	Class. Code
air contamina be attached w	nt source. hen applical	of the followin In addition, a ble. Check as	compliance ti appropriate th	me schedule ne following	form is to
Appendix Appendix	C, Inciner D, Surface	rning Equipmen [.] ator Coating or	t	L, Solvent Cleaning ix M, Fugit Emissio	
Appendix	E, Storage H, Gasolin Facility	e Dispensing		N, Rubber Manufactu	ring
	Gasoline Terminal	Rack at Bulk Plant or	Appendix	O, Dry Clear Facility P, Landfil	•
Appendix	K, Surface Line or	Coating Printing Line	Other App Compliand	pendix ce Time Scho	edule
	•	ame as used on Source (same as		Storage	e Tank F1-2
Administrative source(s) desc	e Code, here cribed herei	I specified i by apply for a n. As required this applicati	Permit to Opera I, the following	ate the air of additional attachments of the second	contaminant documents nts):

Pursuant to OAC Rule 3745-35-02(B) (Permit to Operate).

Operation of an air contaminant source without an effective permit to operate is prohibited to 3704.05 Ohio Revised Code. Page 1 EPA-3161

Premise No///
Source No/
Application No/

DO	E - FEMP
	(Facility Name)
OEPA	NO 1431110128 T024
	FEMP ID NO. 02-013

APPENDIX E-2

INORGANIC MATERIAL STORAGE TANK OR STORAGE TANK WITH CAPACITY LESS THAN 40,000 GALLONS

1.	Tank identification: Name or number <u>F1-2 (FEMP 2-013)</u> Date Installed <u>1952</u>
- •	EP2-005 (month/year)
2.	Tank capacity: 3,300 gallons
3.	Tank shape: [X] Cylindrical [] Rectangular [] Spherical [] Other, specify
1.	Tank dimensions: Diameter 7' Height 11'6" Length N/A Width N/A
5.	Tank shell material: [] Steel [] Aluminum [X] Other, specify Stainless Steel
5.	Type of tank: [] External floating roof tank [] Internal floating roof tank [X] Fixed roof tank [] Vertical cylindrical tank [] Horizontal cylindrical tank [] Pressure tank [] Other, specify
7.	Location of tank: [] Outdoors [X] Indoors [] Underground
3.	Type of filling: [X] Splash [] Submerged [] Other, specify
).	If this tank is located outdoors and above ground, provide the paint color of the tank. N/A
	[] Aluminum (specular) [] Light gray [] White [] Aluminum (diffuse) [] Medium gray [] Other, specify
	Condition of paint: [] Good [] Poor
0.	If this tank is equipped with or vented to a vapor control system, complete (a) through (c) of this item.
	a) Type of vapor control system <u>Bubble Cap Tower</u> Manufacturer <u>Custom</u> Make or model N/A Date installed (month and year) 1954
	b.) Date tank was equipped with or vented to vapor control system (month & year) <u>UNK</u>
	c) Specify the rate of emission or percent control (by weight) for any pollutants being controlled: Nox 88.9% (DATA PREVIOUSLY SUBMITTED) (Attach calculations and test data to support response, unless previously submitted)

0001

DOE - FEMP

(Facility Name)

F1-2 (FEMP 2-013) (tank identification)

						control.
	al Data (comp Attach additi				all materials stored	or to b
a) Materia	l <u>Uranyl Ni</u>	trate	ADI	Trade Name _	N/A N/A	
b) Tempera (If tem	ture of store perature is a ressure of st	d material: pproximately ored material	Average <u>AME</u> outdoor amb	3_ •F and Maxi ient temperatu		
i.) Act (Aq es	ueous Solutio sentially wat	ssure: _ n _ er)	0.29	psia at maxim	ge storage temperatur um storage temperatur aximum	'e
	material stor d: psi			gas, provide	the pressure at which	it
	fuel oil, ke				anic liquid <u>other</u> tha petroleum liquid, ans	
Is it a p	hotochemicall	y reactive ma	terial? [] Yes [X]	No	
) Type of	waste materia	al (If the mat	terial is a	waste, answer	the question below.)	
Is it a h	azardous wast dentify type	e? [] yes (EPA hazardou	[] No s waste numb	per)		
f) Indicate	the year (or 12-month pe	eriod) for i	tem (g):	1987	
j) Annual 1	throughput of	material:6	00,000	ga	llons.	•

Storage Tank Emission Report Thursday, September 16 1993

10:26 AM

Tank Characteristics Identification Identification No.: T024 City: Dayton State: Ohio Company: D0E-FEMP	
Input Parameters Type of Tank: Vertical Fixed Roof	
Tank Dimensions Shell Height (ft): 10 Diameter (ft): 8 Liquid Height (ft): 9 Volume (gallons): 3300 Turnovers: 182 Net Throughput (gal/yr): 600000	
Roof Characteristics Roof Type: Cone Roof Height (ft): 0.000 Slope (ft/ft): 0.00000 Dome Radius (ft): 0.00	
Paint Characteristics Shell Color/Shade: Aluminum/Specular Shell Condition: Good Roof Color/Shade: Aluminum/Specular Roof Condition: Good	
Breather Vent Settings Vacuum Setting(psig): 0.00 Pressure Setting(psig): 0.00	
Daily Average Ambient Temperature (Degrees Fahrenheit Daily Minimum Ambient Temperature (Degrees Fahrenheit Daily Maximum Ambient Temperature (Degrees Fahrenheit Daily Ambient Temperature Range = Solar Insolation Factor = Alpha (Shell) = Alpha (Roof) = Liquid Bulk Temperature (Degrees Fahrenheit) = Average Liquid Surface Temperature (Degrees Fahrenheit Daily Maximum Liquid Surface Temperature (Degrees Fahrenheit Daily Minimum Liquid Surface Temperature (Degrees Fah Daily Vapor Temperature Range = Storage Tank Vapor Pressure Information) = 42.30) = 61.50 19.20 1160.00 0.39 0.39 53.24 t) = 56.22 renheit) = 62.84
Scorage, Talk Tapor 111000010 Information	

Speciation Option: None

Chemical Liquid: Uranyl Nitrate

Vapor Pressure of total mixture = 0.227238
Minimum Vapor Pressure of total mixture = 0.175816
Maximum Vapor Pressure of total mixture = 0.287205
Vapor Molecular Weight of Mixture = 18.000000
Vapor pressure range = 0.111389

4799

---- Storage Tank Standing Loss Information (AP-42) ---Roof Outage = 0.00
Vapor Space Outage = 1.00
Vapor Space Volume = 50.27
Vapor Density = 0.0007
Breather Vent Range = 0.000000
Vapor Space Expansion Factor = 0.044914
Vented Vapor Saturation Factor = 0.988100
Total Standing Losses = 0.60

---- Storage Tank Working Loss Information (AP-42) ---Net Throughput (gal/year) = 600000
Liquid Volume (cubic feet) = 452
Turnovers = 177
Turnover Factor = 0.3359
Working Loss Product Factor = 1.00
Total Working Losses = 19.63

---- Storage Tank Total Losses (AP-42) ---- Total losses = 20.23 lbs/year

URANIUM EMISSIONS

The calculations for uranium emissions are based on known data where possible and where data for parameters is unknown or incomplete, conservative values producing a "worst case" condition for emissions are used.

The conditions used to determine uranium emissions from the tank are as follows:

- (1) At typical tank pressures and temperatures, the vapor pressure of the Uranyl Nitrate solution is equal to that of water.
- (2) Since uranium does not vaporize at storage conditions the only mechanism for uranium loss from the tank is by entrainment in the aerosol or mist generated during liquid storage and transfer.
- (3) Uranium emissions are determined by multiplying the amount of water lost from the tank by entrainment in the aerosol or mist generated during liquid storage and transfer by an emission factor determined from laboratory tests conducted on Lab sample D-37, Lab #2-9846.
- (4) The emission factor has been determined to be 6 x 10^{-06} gU/l of solution; the maximum concentration of uranium entrained in the vapor from a boiling solution of 9% uranyl nitrate as determined by the laboratory tests.
- (5) Maximum emissions are five times the calculated annual emissions.

These calculations are based on conservative estimates, the actual emissions are expected to be less than those indicated.

Annual Emissions: 20.23 lb water $| 6 \times 10^{-06}$ lb U | = 1.21 E-7 lb U/year year | 1000 lb water |

Maximum Emissions: 1.21 E-7 lb U/year x 5 = 6.07 E-7 lb U/year

P+ 1 1.

OHIO ENVIRONMENTAL PROTECTION AGENCY APPLICATION FOR A PERMIT TO OPERATE AN AIR CONTAMINANT SOURCE

D.O.EFernald Environmental Management	Mr. Stephen M. Beckman
Facility Name <u>Project</u>	Person to Contact
7400 Willey Road	Post Office Box 398704
Facility Address	Mailing Address
Fernald Hamilton 45030	<u> Cincinnati OH 45239-8705</u>
City County Zip	City State Zip
513/ 738-6502	513/ 738-6502
Telephone Area Number	Telephone
#1431110128-T025	4953
(Application no., if this is a renewal appl	
 Complete and attach any of the followin air contaminant source. In addition, a be attached when applicable. Check as Appendix A, Process Appendix B, Fuel-Burning Equipment 	compliance time schedule form is to appropriate the following: Appendix L, Solvent Metal t Cleaning
Appendix C, Incinerator Appendix D, Surface Coating or Printing Operation	Appendix M, Fugitive Dust Emission Sources
X Appendix E, Storage TankAppendix H, Gasoline DispensingFacility	Specify Appendix NoAppendix N, Rubber Tire Manufacturing
Appendix J, Loading Rack at Bulk Gasoline Plant or Terminal	Appendix O, Dry Cleaning FacilityAppendix P, Landfills
Appendix K, Surface Coating Line or Printing Line	Other Appendix Compliance Time Schedule
 Description of Source (same as used on a Your identification for Source (same as 	Storage Tank F1-25
I, being the individual specified in Administrative Code, hereby apply for a source(s) described herein. As required are submitted as part of this applicati	Permit to Operate the air contaminant, the following additional documents

*Pursuant to OAC Rule 3745-35-02(B) (Permit to Operate).

Operation of an air contaminant source without an effective permit to operate is prohibited to 3704.05 Ohio Revised Code. Page 1 EPA-3161

Premise No	//
Source No	_/
Application	No/

D0	<u>E - FEMP</u>
	(Facility Name)
OEPA	NO 1431110128 TO
	FFMP ID NO. 02-01

APPENDIX E-2

INORGANIC MATERIAL STORAGE TANK OR STORAGE TANK WITH CAPACITY LESS THAN 40,000 GALLONS

1.	Tank identification: Name or number $F1-25$ (FEMP 2-014) Date Installed 1952 EP2-006 (month/year)
2.	Tank capacity: 23,500 gallons
3.	Tank shape: [X] Cylindrical [] Rectangular [] Other, specify
4.	Tank dimensions: Diameter 14'6" Height 19' Length N/A Width N/A
5.	Tank shell material: [] Steel [] Aluminum [X] Other, specify Stainless Steel
6.	Type of tank: [] External floating roof tank [] Internal floating roof tank [X] Fixed roof tank [] Vertical cylindrical tank [] Horizontal cylindrical tank [] Pressure tank [] Other, specify
7.	Location of tank: [] Outdoors [X] Indoors [] Underground
3.	Type of filling: [X] Splash [] Submerged [] Other, specify
9.	If this tank is located outdoors and above ground, provide the paint color of the tank. N
	[] Aluminum (specular) [] Light gray [] White [] Aluminum (diffuse) [] Medium gray [] Other, specify
	Condition of paint: [] Good [] Poor
0.	If this tank is equipped with or vented to a vapor control system, complete (a) through (of this item.
	a) Type of vapor control system Bubble Cap Tower Manufacturer Custom Make or model N/A Date installed (month and year) 1954
	b) Date tank was equipped with or vented to vapor control system (month & year) <u>UNK</u>
	c) Specify the rate of emission or percent control (by weight) for any pollutants bei controlled: NOx 88.9% (DATA PREVIOUSLY SUBMITTED) (Attach calculations and test data to support response, unless previously submitted)

0027

DOE - FEMP
(Facility Name) F1-25 (FEMP 2-014)
(tank identification)
3 11/4

	Type of Vent Valve	Pressure Setting	Vacuum Setting	If pressurvapor control.	re relief is d . identify the	ischarged to a vapor control.
2.	Operational Data (c stored. Attach add				all materials	stored or to be
	a) Material <u>Uranyl</u> Density: <u>~9.0</u>	Nitrate _ lbs/gal or _	• API	Trade Name Producer	N/A N/A	
	b) Temperature of sto (If temperature is	ored material: s approximatel	Average <u>A</u> y outdoor am	<u>MB</u> ∘F and Maxim bient temperatur	num <u>AMB</u> · F re, write "AMB"	.)
	c) Vapor pressure of is not known, write		al (Complete	e i, ii, iii of i	this item. If	vapor pressure
	i.) Actual vapor (Aqueous Solu essentially ii.) Reid vapor pr	tion water)	0.29	_ psia at maximu	um storage temp	erature
,	<pre>iii.) If material s is stored:</pre>			ed gas, provide t	the pressure at	which it
	d) Type of liquid organized gasoline, fuel oil, question below.)	ganic material kerosene, cru	(If the mat de oil, lubr	erial is an orga ricant or other p	anic liquid <u>oth</u> petroleum liqui	ner than a id, answer the
	Is it a photochemic	ally reactive	material?	[] Yes [X]	No	
	e) Type of waste mate	erial (If the m	material is	a waste, answer	the question b	elow.)
	Is it a hazardous wallf yes, identify ty	aste? [] ye pe (EPA hazard	s [] No ous waste nu	mber)	·	
	f) Indicate the year	(or 12-month	period) for	item (g):	1987	`
	g) Annual throughput	of material: _	600,000	gal	lons.	
omp	oleted by <u>Ervin Fis</u> l	ner, Jr.		Da	ate <u>Aug. 19</u> ,	1993

Storage Tank Emission Report Thursday, September 16 1993

10:58 AM

Identification Identification No.: City: State: Company:	TO25 Dayton Ohio DOE-FEMP	
Input Parameters Type of Tank:	Vertical Fixed Roof	
Tank Dimensions Shell Height (ft): Diameter (ft): Liquid Height (ft): Volume (gallons): Turnovers: Net Throughput (gal/yr):	19 15 18 23500 26 600000	
Roof Characteristics Roof Type: Roof Height (ft): Slope (ft/ft): Dome Radius (ft):	Cone 0.000 0.00000 0.00	
Paint Characteristics Shell Color/Shade: Shell Condition: Roof Color/Shade: Roof Condition:	Aluminum/Specular Good Aluminum/Specular Good	
Breather Vent Settings Vacuum Setting(psig): Pressure Setting(psig):	0.00	
Daily Minimum Ambient Temper Daily Maximum Ambient Temper Daily Ambient Temperature F Solar Insolation Factor = Alpha (Shell) = Alpha (Roof) = Liquid Bulk Temperature (De Average Liquid Surface Temp Daily Maximum Liquid Surface Daily Minimum Liquid Surface Daily Vapor Temperature Ran	erature (Degrees Fahrenheit) = erature (Degrees Fahrenheit) erature (Degrees Fahrenheit) erature (Degrees Fahrenheit) erature (Degrees Fahrenheit)	51.90 42.30 61.50 19.20 1160.00 0.39 0.39 53.24 56.22 = 62.84 = 49.60 26.49
Storage Tank Vapor Pre	ssure Information	

---- Tank Characteristics ----

Speciation Option: None

Chemical Liquid: Uranyl Nitrate

Vapor Pressure of total mixture = 0.227238
Minimum Vapor Pressure of total mixture = 0.175816
Maximum Vapor Pressure of total mixture = 0.287205
Vapor Molecular Weight of Mixture = 18.000000
Vapor pressure range = 0.111389

---- Storage Tank Standing Loss Information (AP-42) ---Roof Outage = 0.00
Vapor Space Outage = 1.00
Vapor Space Volume = 176.71
Vapor Density = 0.0007
Breather Vent Range = 0.000000
Vapor Space Expansion Factor = 0.044914
Vented Vapor Saturation Factor = 0.988100
Total Standing Losses = 2.11

---- Storage Tank Working Loss Information (AP-42) ---Net Throughput (gal/year) = 600000
Liquid Volume (cubic feet) = 3181
Turnovers = 25
Turnover Factor = 1.0000
Working Loss Product Factor = 1.00
Total Working Losses = 58.43

---- Storage Tank Total Losses (AP-42) ---- Total losses = 60.55 lbs/year

4799

URANIUM EMISSIONS

The calculations for uranium emissions are based on known data where possible and where data for parameters is unknown or incomplete, conservative values producing a "worst case" condition for emissions are used.

The conditions used to determine uranium emissions from the tank are as follows:

- (1) At typical tank pressures and temperatures, the vapor pressure of the Uranyl Nitrate solution is equal to that of water.
- (2) Since uranium does not vaporize at storage conditions the only mechanism for uranium loss from the tank is by entrainment in the aerosol or mist generated during liquid storage and transfer.
- (3) Uranium emissions are determined by multiplying the amount of water lost from the tank by entrainment in the aerosol or mist generated during liquid storage and transfer by an emission factor determined from laboratory tests conducted on Lab sample D-37, Lab #2-9846.
- (4) The emission factor has been determined to be 6 x 10^{-06} gU/l of solution; the maximum concentration of uranium entrained in the vapor from a boiling solution of 9% uranyl nitrate as determined by the laboratory tests.
- (5) Maximum emissions are five times the calculated annual emissions.

These calculations are based on conservative estimates, the actual emissions are expected to be less than those indicated.

Annual Emissions:

 $60.55 \text{ lb water} \mid 6 \times 10^{-06} \text{ lb U} \mid = 3.63 \text{ E-7 lb U/year} \mid 1000 \text{ lb water} \mid$

year

Maximum Emissions:

3.63 E-7 lb U/year x 5 = 1.82 E-6 lb U/year

OHIO ENVIRONMENTAL PROTECTION AGENCY APPLICATION FOR A PERMIT TO OPERATE AN AIR CONTAMINANT SOURCE

<u>D.O.EFernald Er</u>	<u>ıvironmental</u>	Management	Mr. Stephen		
Facility Name		<u>Project</u>	Person to C	ontact	
7400 Willey Road			Post Office Box 398704		
Facility Address			Mailing Add	ress	
Fernald Ham	nilton	45030	Cincinnati	OH (45239-8705
City	County	Zip	City	State	Zip
	513/ 738	3-6502		513/ 7	38-6502
Telephone	Area	Number	Telephone		
	#14311101	28-T026		4953	
(Application no.,			ication)		Class. Code
air contamina be attached w	nt source.	f the following In addition, a le. Check as	compliance ti appropriate th	me schedule	form is to
		ning Equipment		Cleaning	rietai
Appendix	c C, Incinera	itor		ix M, Fugiti	
Appendix	D, Surface	Coating or Operation		Emissic	on Sources
X Appendix	E, Storage	Tank		Specify Ap	pendix No.
Appendix	c H, Gasoline	Dispensing	Appendix	N, Rubber 1	ire
Annondiv	Facility	Rack at Bulk	Annondiv	Manufactur O, Dry Clea	
Append ix	Gasoline		Appendix	Facility	uiriig
	Terminal			P, Landfill	S
Appendix	K, Surface	Coating Printing Line	Other App	ce Time Sche	ndu] o
	Line of	Frincing Line	compirant	e time sche	
Description o	f Source (san	me as used on a	ppendix): <u>Pla</u>	ant 2/3 Urar	yl Nitrate
3. Your identifi	cation for S	ource (same as	used on apper		Tank F1-26 # 2-015
Administrativ	e Code, hereb cribed hereir	specified in by apply for a P n. As required, this application	ermit to Opera , the following	ate the air of additional attachme for some state of the sound state o	documents nts):

*Pursuant to OAC Rule 3745-35-02(B) (Permit to Operate).

Operation of an air contaminant source without an effective permit to operate is prohibited to 3704.05 Ohio Revised Code. Page 1 $\,$ EPA-3161

FOR OFFICIAL USE ONLY
Premise No//
OEPA NO 1431110128 <u>APPENDIX E-2</u> FEMP ID NO. 02
INORGANIC MATERIAL STORAGE TANK OR
STORAGE TANK WITH CAPACITY LESS THAN 40,000 GALLONS 1. Tank identification: Name on number
1. Tank identification: Name or number <u>F1-26 (FEMP 2-015)</u> Date Installed <u>1952</u> EP2-007 (month/year
2. Tank capacity: 23,500 gallons
3. Tank shape: [X] Cylindrical [] Rectangular [] Other, specify
4. Tank dimensions: Diameter <u>14'6"</u> Height <u>19'</u> Length <u>N/A</u> Width <u>N/A</u>
5. Tank shell material: [] Steel [] Aluminum [X] Other, specify <u>Stainless Steel</u>
6. Type of tank: [] External floating roof tank [] Internal floating roof tank [X] Fixed roof tank [] Vertical cylindrical tank [] Horizontal cylindrical tank [] Pressure tank [] Other, specify
7. Location of tank: [] Outdoors [X] Indoors [] Underground
8. Type of filling: [X] Splash [] Submerged [] Other, specify
9. If this tank is located outdoors and above ground, provide the paint color of the tank.
[] Aluminum (specular) [] Light gray [] White [] Aluminum (diffuse) [] Medium gray [] Other, specify
Condition of paint: [] Good [] Poor
10. If this tank is equipped with or vented to a vapor control system, complete (a) through of this item.
a) Type of vapor control systemBubble Cap TowerManufacturerCustomMake or modelN/ADate installed (month and year)1954
b) Date tank was equipped with or vented to vapor control system (month & year) IINK

34 EV.

c) Specify the rate of emission or percent control (by weight) for any pollutants be controlled: NOx 88.9% (DATA PREVIOUSLY SUBMITTED)

(Attach calculations and test data to support response, unless previously submitted)

P.	790	

DOE - FEMP
(Facility Name)
F1-26 (FEMP 2-015)
(tank identification)

Type of Vent Valve	Pressure Setting		If pressur vapor control.		
Operational Data stored. Attach	(complete (a) th additional sheets			all materials st	ored or to b
a) Material <u>Urar</u> Density: <u>~9.0</u>	nyl Nitrate lbs/gal or _	• API	_ Trade Name Producer	N/A N/A	
b) Temperature of		Average <u>A</u>	MB_ ∘F and Maxim	um <u>AMB</u> • F	
c) Vapor pressure is not known, w	of stored materi vrite "unknown"):	al (Complete	i, ii, iii of t	his item. If v	apor pressur
i.) Actual vapo (Aqueous So essential ii.) Reid vapor	olution ly water)	0.29		m storage tempe	rature
	l stored is a gas psi gage at		d gas, provide t	he pressure at	which it
d) Type of liquid gasoline, fuel or question below.)	il, kerosene, cru	(If the mat de oil, lubr	erial is an orga icant or other p	nic liquid <u>othe</u> etroleum liquid	<u>r</u> than a , answer the
Is it a photocher	nically reactive	material?	[] Yes [X]	No	
e) Type of waste m	naterial (If the n	material is	a waste, answer	the question bel	low.)
Is it a hazardous If yes, identify	s waste? [] ye type (EPA hazard	s [] No ous waste nu	mber)		
f) Indicate the ye	ear (or 12-month	period) for	item (g):	1987	
g) Annual throughp	urt of matamial.	600 000	gal	lons	

March March

Storage Tank Emission Report Thursday, September 16 1993

10:58 AM

```
---- Tank Characteristics ----
 Identification
    Identification No.:
                             T026
                             Dayton
    City:
                             Ohio
    State:
    Company:
                             DOE-FEMP
 Input Parameters
                             Vertical Fixed Roof
    Type of Tank:
Tank Dimensions
    Shell Height (ft):
                                      19
   Diameter (ft):
                                      15
   Liquid Height (ft):
                                      18
   Volume (gallons):
                                   23500
                                      26
   Turnovers:
   Net Throughput (gal/yr):
                                  600000
Roof Characteristics
   Roof Type:
                              Cone
   Roof Height (ft):
                              0.000
   Slope (ft/ft):
                            0.00000
   Dome Radius (ft):
                               0.00
Paint Characteristics
   Shell Color/Shade:
                             Aluminum/Specular
   Shell Condition:
                             Good
   Roof Color/Shade:
                             Aluminum/Specular
   Roof Condition:
                             Good
Breather Vent Settings
   Vacuum Setting(psig):
                              0.00
   Pressure Setting(psig): 0.00
---- Storage Tank Contents Temperature Data ----
Daily Average Ambient Temperature (Degrees Fahrenheit) = Daily Minimum Ambient Temperature (Degrees Fahrenheit) =
                                                                      51.90
                                                                      42.30
Daily Maximum Ambient Temperature (Degrees Fahrenheit) =
                                                                     61.50
Daily Ambient Temperature Range =
                                                                     19.20
Solar Insolation Factor =
                                                                  1160.00
Alpha (Shell) =
                                                                     0.39
Alpha (Roof) =
                                                                     0.39
Liquid Bulk Temperature (Degrees Fahrenheit) =
                                                                     53.24
Average Liquid Surface Temperature (Degrees Fahrenheit) =
                                                                     56.22
Daily Maximum Liquid Surface Temperature (Degrees Fahrenheit) = 62.84
Daily Minimum Liquid Surface Temperature (Degrees Fahrenheit) = 49.60
Daily Vapor Temperature Range =
                                                                    26.49
--- Storage Tank Vapor Pressure Information ----
```

```
Chemical Liquid: Uranyl Nitrate

Vapor Pressure of total mixture =

Minimum Vapor Pressure of total mixture =

Maximum Vapor Pressure of total mixture =
```

Speciation Option: None

Total Standing Losses =

Vapor Molecular Weight of Mixture = 18.000000 Vapor pressure range = 0.111389 --- Storage Tank Standing Loss Information (AP-42) ----0.00 Roof Outage = Vapor Space Outage = 1.00 Vapor Space Volume = 176.71 Vapor Density = 0.0007 Breather Vent Range = 0.000000 Vapor Space Expansion Factor = 0.044914

0.227238

0.175816

0.287205

---- Storage Tank Working Loss Information (AP-42) ---Net Throughput (gal/year) = 600000
Liquid Volume (cubic feet) = 3181
Turnovers = 25
Turnover Factor = 1.0000
Working Loss Product Factor = 1.00
Total Working Losses = 58.43

---- Storage Tank Total Losses (AP-42) ----Total losses = 60.55 lbs/year

Vented Vapor Saturation Factor = 0.988100

URANIUM EMISSIONS

The calculations for uranium emissions are based on known data where possible and where data for parameters is unknown or incomplete, conservative values producing a "worst case" condition for emissions are used.

The conditions used to determine uranium emissions from the tank are as follows:

- (1) At typical tank pressures and temperatures, the vapor pressure of the Uranyl Nitrate solution is equal to that of water.
- (2) Since uranium does not vaporize at storage conditions the only mechanism for uranium loss from the tank is by entrainment in the aerosol or mist generated during liquid storage and transfer.
- (3) Uranium emissions are determined by multiplying the amount of water lost from the tank by entrainment in the aerosol or mist generated during liquid storage and transfer by an emission factor determined from laboratory tests conducted on Lab sample D-37, Lab #2-9846.
- (4) The emission factor has been determined to be 6×10^{-06} gU/l of solution; the maximum concentration of uranium entrained in the vapor from a boiling solution of 9% uranyl nitrate as determined by the laboratory tests.
- (5) Maximum emissions are five times the calculated annual emissions.

These calculations are based on conservative estimates, the actual emissions are expected to be less than those indicated.

Annual Emissions:

60.55 | b water | 6 x 10⁻⁰⁶ | b U | = 3.63 E-7 | b U/year | 1000 | b water |

vear

Maximum Emissions:

3.63 E-7 lb U/year x 5 = 1.82 E-6 lb U/year

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OHIO ENVIRONMENTAL PROTECTION AGENCY APPLICATION FOR A PERMIT TO OPERATE AN AIR CONTAMINANT SOURCE

•		•		4
	nald Environment		Mr. Stephen Person to C	
Facility N	ame	<u>Project</u>	rerson to t	Ulitact
7400 Wille		 	Post Office	
Facility A	ddress		Mailing Add	ress
Fernald	<u> Hamilton</u>	45030	Cincinnati	OH 45239-8705
City	County	Zip	City	State Zip
	513/	738-6502		513/ 738-6502
Telephone	Area		Telephone	
	#14311	10128-T027	•	4953
(Applicati	on no., if this		lication)	Std. Ind. Class. Code
be attAAAAA	ached when applic ppendix A, Proce ppendix B, Fuel- ppendix C, Incin ppendix D, Surfa Printi ppendix E, Storac ppendix H, Gasol Facili ppendix J, Loadi	cable. Check as ss Burning Equipmen erator ce Coating or ng Operation ge Tank ine Dispensing ty ng Rack at Bulk ne Plant or al	appropriate thAppendix tAppendAppendixAppendix	L, Solvent Metal Cleaning ix M, Fugitive Dust Emission Sources Specify Appendix No. N, Rubber Tire Manufacturing O, Dry Cleaning Facility P, Landfills
	Line	or Printing Line	Compliand	ce Time Schedule
2. Descri	ption or source (same as used on	appendix): Pi	ant 2/3 Uranyl Nitrate Storage Tank F2E-9
3. Your id	dentification for	r Source (same a	s used on apper	ndix): <u>FEMP_#_2-016</u>
Adminis source	strative Code, he	reby apply for a ein. As required	Permit to Opera d, the following ion (describe a Authorized S Kenneth L. A	Signature

Pursuant to OAC Rule 3745-35-02(B) (Permit to Operate).

Operation of an air contaminant source without an effective permit to operate is prohibited to 3704.05 Ohio Revised Code. Page 1 EPA-3161

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EUD	VEE	TCI	Λ1	USE	UNI	V
FUR	ULL	16.1	ML.	UJL	UITL	

Premise No.	///
Source No	
Application	No/

D0	<u> </u>	FEM	P	
				Name
0EPA	NÒ	143	1110	128 1
	FFM	II q) NO	. 02-

APPENDIX E-2

INORGANIC MATERIAL STORAGE TANK OR STORAGE TANK WITH CAPACITY LESS THAN 40,000 GALLONS

1.	Tank identification: Name or number F2E-9 (FEMP 2-016) Date Installed 1952 (month/year
2.	Tank capacity: 2,500 gallons
3.	Tank shape: [X] Cylindrical [] Rectangular [] Other, specify
4.	Tank dimensions: Diameter 6' Height 12' Length N/A Width N/A
5.	Tank shell material: [] Steel [] Aluminum [X] Other, specify Stainless Steel
6.	Type of tank: [] External floating roof tank
7.	Location of tank: [] Outdoors [X] Indoors [] Underground
8.	Type of filling: [X] Splash [] Submerged [] Other, specify
9.	If this tank is located outdoors and above ground, provide the paint color of the tank. N/A Tank is not painted [] Aluminum (specular) [] Light gray [] White [] Aluminum (diffuse) [] Medium gray [] Other, specify
	Condition of paint: [] Good [] Poor
10.	If this tank is equipped with or vented to a vapor control system, complete (a) through of this item. N/A
	a) Type of vapor control system Manufacturer Make or model Date installed (month and year)
	b) Date tank was equipped with or vented to vapor control system (month & year) N/A
	c) Specify the rate of emission or percent control (by weight) for any pollutants be controlled: (Attach calculations and test data to support response, unless previously submitted)

0039

$egin{array}{c} & \frac{ ext{DOE} - ext{FEMP}}{ ext{(Facility Name)}} \ & \frac{ ext{F2E-9} & ext{(FEMP 2-016)}}{ ext{(tank identification)}} \end{array}$

Type of Vent Valve	Pressure Vacuum Setting Setting	If pressure relief is vapor control, identify th	discharged to a ne vapor control
	complete (a) through (g) ditional sheets if necess	of this item for all material: ary.)	s'stored or to b
a) Material <u>Urany</u> Density: <u>~9.0</u>	l Nitrate lbs/gal or API	Trade Name N/A Producer N/A	
		<u>AMB</u> •F and Maximum <u>AMB</u> • F ambient temperature, write "AM	
c) Vapor pressure o		te i, ii, iii of this item.	If vapor pressur
essentially	water)	psia at average storage te psia at maximum storage te psi and minimum-maximum	
	stored is a gas or liquif psi gage at•F	ied gas, provide the pressure	at which it
l) Type of liquid or gasoline, fuel oil question below.)	rganic material (If the m , kerosene, crude oil, lu	aterial is an organic liquid <u>c</u> bricant or other petroleum lic	o <u>ther</u> than a quid, answer the
Is it a photochemic	cally reactive material?	[] Yes [X] No	
) Type of waste mat	terial (If the material is	s a waste, answer the question	below.)
	waste? [] yes [] No ype (EPA hazardous waste !	o number)	·····
) Indicate the year	c (or 12-month period) fo	or item (g): <u>1987</u>	
) Annual throughput		gallons.	



Storage Tank Emission Report Thursday, September 16 1993

10:59 AM

```
--- Tank Characteristics ----
Identification
   Identification No.:
                            T027
                            Dayton
   City:
                            Ohio
   State:
                            DOE-FEMP
   Company:
Input Parameters
                            Vertical Fixed Roof
   Type of Tank:
Tank Dimensions
                                    12
   Shell Height (ft):
   Diameter (ft):
                                     6
                                    12
   Liquid Height (ft):
   Volume (gallons):
                                  2500
   Turnovers:
                                    40
                                100000
   Net Throughput (gal/yr):
Roof Characteristics
   Roof Type:
                             Cone
                             0.000
   Roof Height (ft):
                           0.00000
   Slope (ft/ft):
   Dome Radius (ft):
                              0.00
Paint Characteristics
                            Aluminum/Specular
   Shell Color/Shade:
   Shell Condition:
                            Good
   Roof Color/Shade:
                            Aluminum/Specular
   Roof Condition:
                            Good
Breather Vent Settings
   Vacuum Setting(psig):
                             0.00
   Pressure Setting(psig): 0.00
---- Storage Tank Contents Temperature Data ----
Daily Average Ambient Temperature (Degrees Fahrenheit) =
                                                                   51.90
                                                                   42.30
Daily Minimum Ambient Temperature (Degrees Fahrenheit) =
Daily Maximum Ambient Temperature (Degrees Fahrenheit) =
                                                                   61.50
                                                                  19.20
Daily Ambient Temperature Range =
                                                                1160.00
Solar Insolation Factor =
                                                                   0.39
Alpha (Shell) =
Alpha (Roof) =
Liquid Bulk Temperature (Degrees Fahrenheit) =
                                                                   0.39
                                                                   53.24
Average Liquid Surface Temperature (Degrees Fahrenheit) =
                                                                   56.22
Daily Maximum Liquid Surface Temperature (Degrees Fahrenheit) =
                                                                   62.84
Daily Minimum Liquid Surface Temperature (Degrees Fahrenheit) = 49.60
                                                                  26.49
Daily Vapor Temperature Range =
```

--- Storage Tank Vapor Pressure Information ----

```
Speciation Option: None
Chemical Liquid: Uranyl Nitrate
```

Vapor Pressure of total mixture =	0.227238
Minimum Vapor Pressure of total mixture =	0.175816
Maximum Vapor Pressure of total mixture =	0.287205
Vapor Molecular Weight of Mixture =	18.000000
Vapor pressure range =	0.111389

```
--- Storage Tank Standing Loss Information (AP-42) ----
Roof Outage = 0.00
Vapor Space Outage = 0.00
Vapor Space Volume = 0.00
Vapor Density = 0.0007
Breather Vent Range = 0.000000
Vapor Space Expansion Factor = 0.044914
Vented Vapor Saturation Factor = 1.000000
Total Standing Losses = 0.00
```

```
---- Storage Tank Working Loss Information (AP-42) ----
Net Throughput (gal/year) = 100000
Liquid Volume (cubic feet) = 339
Turnovers = 39
Turnover Factor = 0.9282
Working Loss Product Factor = 1.00
Total Working Losses = 9.04
```

---- Storage Tank Total Losses (AP-42) ---- Total losses = 9.04 lbs/year

URANIUM EMISSIONS

The calculations for uranium emissions are based on known data where possible and where data for parameters is unknown or incomplete, conservative values producing a "worst case" condition for emissions are used.

The conditions used to determine uranium emissions from the tank are as follows:

- (1) At typical tank pressures and temperatures, the vapor pressure of the Uranyl Nitrate solution is equal to that of water.
- (2) Since uranium does not vaporize at storage conditions the only mechanism for uranium loss from the tank is by entrainment in the aerosol or mist generated during liquid storage and transfer.
- (3) Uranium emissions are determined by multiplying the amount of water lost from the tank by entrainment in the aerosol or mist generated during liquid storage and transfer by an emission factor determined from laboratory tests conducted on Lab sample D-37, Lab #2-9846.
- (4) The emission factor has been determined to be 6 x 10^{-06} gU/l of solution; the maximum concentration of uranium entrained in the vapor from a boiling solution of 9% uranyl nitrate as determined by the laboratory tests.
- (5) Maximum emissions are five times the calculated annual emissions.

These calculations are based on conservative estimates, the actual emissions are expected to be less than those indicated.

Annual Emissions: 9.04 lb water | 6 x 10^{-06} lb U | = 5.42 E-8 lb U/year year | 1000 lb water |

Maximum Emissions: 5.42 E^{-8} 1b U/year x 5 = 2.71 E^{-7} 1b U/year

OHIO ENVIRONMENTAL PROTECTION AGENCY APPLICATION FOR A PERMIT TO OPERATE AN AIR CONTAMINANT SOURCE

4799

D.O.EFernal Facility Name	<u>d Environmental</u>	Management Project	Mr. Stephen Person to C	
7400 Willey R Facility Addr			Post Office Mailing Add	
Fernald	Hamilton	45030	Cincinnati	OH 45239-8705
City	County	Zip	City	State Zip
	513/ 738			513/ 738-6502
Telephone	Area	Number	Telephone	
	#1431110			4953
(Application	no., if this is	a renewal app	olication)	Std. Ind. Class. Code
air contar be attach	and attach any o minant source. ed when applicat ndix A, Process ndix B, Fuel-Bu	In addition, ole. Check as	a compliance tings appropriate the appropriate theAppendix	ost appropriate to the me schedule form is to me following: L, Solvent Metal Cleaning
Appe	ndix C, Incinera ndix D, Surface	ator		x M, Fugitive Dust Emission Sources
Appe	ndix E, Storage ndix H, Gasolind Facility	Tank Dispensing		Specify Appendix No. N, Rubber Tire Manufacturing
	Terminal	Plant or	Appendix	O, Dry Cleaning Facility P, Landfills
Appe	ndix K, Surface Line or	Printing Line	Other App eComplianc	e Time Schedule
•	•		, ,	nt 2/3 Uranyl Nitrate Storage Tank F1-405 dix): FEMP # 2-151
Administra source(s)	ative Code, here described herei	by apply for a n. As require	Permit to Opera ed, the following tion (describe a Authorized S Kenneth L. A	5-02(B) of the Ohio te the air contaminant g additional documents ll attachments): Light Grant grant grant grant grant recommendation and recommendation are recommendation and recommendation and recommendation are recommendation and recommendation are recommendation and recommendation and recomme

Pursuant to OAC Rule 3745-35-02(B) (Permit to Operate).

Operation of an air contaminant source without an effective permit to operate is prohibited to 3704.05 Ohio Revised Code. Page 1 EPA-3161

Premise No.	_/_//
Source No	
Annlication	No
	4799
سنيب	~~

DOE - FEMP (Facility Name) OEPA NO 1431110128 T102 FEMP ID NO. 02-151

APPENDIX E-2

INORGANIC MATERIAL STORAGE TANK OR STORAGE TANK WITH CAPACITY LESS THAN 40,000 GALLONS

1.	Tank identification: Name or number <u>F1-405 (FEMP 2-151)</u> Date Installed <u>1952</u>
	EP2-128 (month/year)
2.	Tank capacity: 5,800 gallons
3.	Tank shape: [X] Cylindrical [] Rectangular [] Other, specify
4.	Tank dimensions: Diameter 9' Height 12' Length N/A Width N/A
	Tank shell material: [] Steel [] Aluminum [X] Other, specify <u>Stainless Steel</u>
6.	Type of tank: [] External floating roof tank [] Internal floating roof tank [X] Fixed roof tank [] Vertical cylindrical tank [] Horizontal cylindrical tank [] Pressure tank [] Other, specify
7.	Location of tank: [X] Outdoors [] Indoors [] Underground
8.	Type of filling: [X] Splash [] Submerged [] Other, specify
9.	If this tank is located outdoors and above ground, provide the paint color of the tank. N/A N/A: Stainless steel tank, not painted [
	Condition of paint: [] Good [] Poor N/A
IJ.	If this tank is equipped with or vented to a vapor control system, complete (a) through (c) of this item. N/A
	a) Type of vapor control system Manufacturer Make or model Date installed (month and year)
	b) Date tank was equipped with or vented to vapor control system (month & year) N/A
	c) Specify the rate of emission or percent control (by weight) for any pollutants being controlled: (Attach calculations and test data to support response, unless previously submitted)

0045

DOE	<u> </u>	EMP	
(Fac	ilit	y Nam	e)
F1-	-405	(FEMI	P 2-151)
(tank	iden	tific	ation)

Pressure Vacuum Type of Vent Valve Setting Setting	
Operational Data (complete (a) through (g) o stored. Attach additional sheets if necessa	f this item for all materials stored or to be ry.)
a) Material <u>Uranyl Nitrate</u> Density: <u>~10.5</u> lbs/gal or API	Trade NameN/AProducerN/A
o) Temperature of stored material: Average <u>/</u> (If temperature is approximately outdoor an	NMB ∘F and Maximum <u>AMB</u> ∘ F
Vapor pressure of stored material (Complete is not known, write "unknown"):	e i, ii, iii of this item. If vapor pressure
i.) Actual vapor pressure: 0.23 (Aqueous Solution 0.29 essentially water) ii.) Reid vapor pressure: Averagep	psia at average storage temperature psia at maximum storage temperature si and minimum-maximum psi
iii.) If material stored is a gas or liquificing is stored: psi gage at •F	ed gas, provide the pressure at which it
l) Type of liquid organic material (If the magasoline, fuel oil, kerosene, crude oil, lub question below.)	terial is an organic liquid <u>other</u> th an a ricant or other petroleum liquid, answer the
Is it a photochemically reactive material?	[] Yes [X] No
e) Type of waste material (If the material is	a waste, answer the question below.)
Is it a hazardous waste? [] yes [] No If yes, identify type (EPA hazardous waste no	umber)
) Indicate the year (or 12-month period) for	item (g): <u>1983</u>
) Annual throughput of material: 1,250,000	gallons.

---- Tank Characteristics ----

3200 0047

Storage Tank Emission Report Thursday, September 16 1993

11:03 AM

```
Identification
   Identification No.:
                            T102
   City:
                            Dayton
                            Ohio
   State:
                            DOE-FEMP
   Company:
Input Parameters
                            Vertical Fixed Roof
   Type of Tank:
Tank Dimensions
   Shell Height (ft):
                                    12
                                     9
   Diameter (ft):
                                    12
   Liquid Height (ft):
                                  5800
   Volume (gallons):
   Turnovers:
                                   216
   Net Throughput (gal/yr): 1250000
Roof Characteristics
   Roof Type:
                             Cone
   Roof Height (ft):
                             0.000
   Slope (ft/ft):
                           0.00000
   Dome Radius (ft):
                              0.00
Paint Characteristics
   Shell Color/Shade:
                            Aluminum/Specular
   Shell Condition:
                            Good
   Roof Color/Shade:
                            Aluminum/Specular
   Roof Condition:
                            Good
Breather Vent Settings
   Vacuum Setting(psig):
                             0.00
                             0.00
   Pressure Setting(psig):
--- Storage Tank Contents Temperature Data ----
                                                                  51.90
Daily Average Ambient Temperature (Degrees Fahrenheit) =
Daily Minimum Ambient Temperature (Degrees Fahrenheit) =
                                                                   42.30
Daily Maximum Ambient Temperature (Degrees Fahrenheit) =
                                                                  61.50
                                                                  19.20
Daily Ambient Temperature Range =
Solar Insolation Factor =
                                                                1160.00
Alpha (Shell) =
                                                                  0.39
Alpha (Roof) =
                                                                  0.39
Liquid Bulk Temperature (Degrees Fahrenheit) =
                                                                  53.24
Average Liquid Surface Temperature (Degrees Fahrenheit) =
                                                                  56.22
Daily Maximum Liquid Surface Temperature (Degrees Fahrenheit) = 62.84
Daily Minimum Liquid Surface Temperature (Degrees Fahrenheit) = 49.60
                                                                 26.49
Daily Vapor Temperature Range =
---- Storage Tank Vapor Pressure Information ----
```

Speciation Option: None Chemical Liquid: Uranyl Nitrate

Vapor Pressure of total mixture = 0.227238
Minimum Vapor Pressure of total mixture = 0.175816
Maximum Vapor Pressure of total mixture = 0.287205
Vapor Molecular Weight of Mixture = 18.000000
Vapor pressure range = 0.111389

---- Storage Tank Standing Loss Information (AP-42) ---Roof Outage = 0.00
Vapor Space Outage = 0.00
Vapor Space Volume = 0.00
Vapor Density = 0.0007
Breather Vent Range = 0.000000
Vapor Space Expansion Factor = 0.044914
Vented Vapor Saturation Factor = 1.000000
Total Standing Losses = 0.00

---- Storage Tank Working Loss Information (AP-42) ---Net Throughput (gal/year) = 1250000
Liquid Volume (cubic feet) = 763
Turnovers = 219
Turnover Factor = 0.3037
Working Loss Product Factor = 1.00
Total Working Losses = 36.98

--- Storage Tank Total Losses (AP-42) ---- Total losses = 36.98 lbs/year

URANIUM EMISSIONS

The calculations for uranium emissions are based on known data where possible and where data for parameters is unknown or incomplete, conservative values producing a "worst case" condition for emissions are used.

The conditions used to determine uranium emissions from the tank are as follows:

- (1) At typical tank pressures and temperatures, the vapor pressure of the Uranyl Nitrate solution is equal to that of water.
- (2) Since uranium does not vaporize at storage conditions the only mechanism for uranium loss from the tank is by entrainment in the aerosol or mist generated during liquid storage and transfer.
- (3) Uranium emissions are determined by multiplying the amount of water lost from the tank by entrainment in the aerosol or mist generated during liquid storage and transfer by an emission factor determined from laboratory tests conducted on Lab sample D-37, Lab #2-9846.
- (4) The emission factor has been determined to be 6 x 10^{-06} gU/l of solution; the maximum concentration of uranium entrained in the vapor from a boiling solution of 9% uranyl nitrate as determined by the laboratory tests.
- (5) Maximum emissions are five times the calculated annual emissions.

These calculations are based on conservative estimates, the actual emissions are expected to be less than those indicated.

Annual Emissions:

36.98 lb water $| 6 \times 10^{-06}$ lb U | = 2.22 E-7 lb U/year

vear

| 1000 | b water |

Maximum Emissions:

2.22 E-7 1b U/year x 5 = 1.11 E-6 1b U/year

OHIO ENVIRONMENTAL PROTECTION AGENCY APPLICATION FOR A PERMIT TO OPERATE AN AIR CONTAMINANT SOURCE

4799

D.O.EFernald	Environmental Management	Mr. Stephen	
Facility Name	<u>Project</u>	Person to C	
7400 Willey Roa	d	Post Office	Box 398704
Facility Addres		Mailing Add	
Fernald H	amilton45030	<u> Cincinnati</u>	OH 45239-8705
City	County Zip	City	State Zip
		v. J	· ·
T-1h	513/ 738-6502	Talanhana	513/ 738-6502
Telephone	Area Number	Telephone \	
	#1431110128-T103		4953
(Application no	., if this is a renewal ap	plication)	Std. Ind. Class. Code
air contamir be attached AppendAppendAppendX_AppendAppendAppend	I attach any of the follow nant source. In addition, when applicable. Check a ix A, Process ix B, Fuel-Burning Equipme ix C, Incinerator ix D, Surface Coating or Printing Operation ix E, Storage Tank ix H, Gasoline Dispensing Facility ix J, Loading Rack at Bulk Gasoline Plant or Terminal ix K, Surface Coating Line or Printing Line	a compliance tings appropriate the sappropriate the sappropriate the sappendix sappend	me schedule form is to be following: L, Solvent Metal Cleaning ix M, Fugitive Dust Emission Sources Specify Appendix No. N, Rubber Tire Manufacturing O, Dry Cleaning Facility P, Landfills
2. Description	of Source (same as used or	n appendix): <u>Pl</u> a	ant 2/3 Uranyl Nitrate
3. Your identif	fication for Source (same	as used on appen	Storage Tank F3E-404 dix): <u>FEMP # 2-153</u>
Administrati source(s) de	he individual specified ve Code, hereby apply for a scribed herein. As requir ed as part of this applica	a Permit to Opera ed, the following tion (describe a Authorized S Kenneth L. A	te the air contaminant g additional documents ll attachments):

Pursuant to OAC Rule 3745-35-02(B) (Permit to Operate).

Operation of an air contaminant source without an effective permit to operate is prohibited to 3704.05 Ohio Revised Code. Page 1 $\,$ EPA-3161 $\,$

FOR OFFICIAL USE ONLY

1 01	K OFFICIAL USE ONE
Pre Sou App	emise No// urce No/ plication No/ (Facility Name) OEPA NO 1431110128 T103
	APPENDIX E-2 FEMP ID NO. 02-153
. -	INORGANIC MATERIAL STORAGE TANK OR STORAGE TANK WITH CAPACITY LESS THAN 40,000 GALLONS
1.	Tank identification: Name or number $F3E-404$ (FEMP 2-153) Date Installed 1952 (month/year)
2.	Tank capacity: 5.800 gallons
3.	Tank shape: [X] Cylindrical [] Rectangular [] Other, specify
4.	Tank dimensions: Diameter 9' Height 12' Length N/A Width N/A
5.	Tank shell material: [] Steel [] Aluminum [X] Other, specify Stainless Steel
6.	Type of tank: [] External floating roof tank [] Internal floating roof tank [X] Fixed roof tank [] Vertical cylindrical tank [] Horizontal cylindrical tank [] Pressure tank [] Other, specify
7.	Location of tank: [X] Outdoors [] Indoors [] Underground
8.	Type of filling: [X] Splash [] Submerged [] Other, specify
9.	If this tank is located outdoors and above ground, provide the paint color of the tank. N/A N/A: Stainless steel tank, not painted [
	Condition of paint: [] Good [] Poor N/A
10.	If this tank is equipped with or vented to a vapor control system, complete (a) through (c) of this item. N/A
	a) Type of vapor control system Manufacturer Make or model Date installed (month and year)
	b) Date tank was equipped with or vented to vapor control system (month & year) <u>N/A</u>

A Charles

controlled:

(Attach calculations and test data to support response, unless previously submitted)

c) Specify the rate of emission or percent control (by weight) for any pollutants being

DOE - FEMP

(Facility Name)

F3E-404 (FEMP 2-153)

(tank identification)

	Pressure Vacuum If pressure relief is discharged to a vpe of Vent Valve Setting Setting vapor control, identify the vapor control
12.	Operational Data (complete (a) through (g) of this item for all materials stored or to stored. Attach additional sheets if necessary.)
	Material <u>Uranyl Nitrate</u> Trade Name <u>N/A</u> Density: ~10.5 lbs/gal or • API Producer N/A
	Temperature of stored material: Average <u>AMB</u> ·F and Maximum <u>AMB</u> · F (If temperature is approximately outdoor ambient temperature, write "AMB".)
	Vapor pressure of stored material (Complete i, ii, iii of this item. If vapor pressure is not known, write "unknown"):
	i.) Actual vapor pressure: (Aqueous Solution
	iii.) If material stored is a gas or liquified gas, provide the pressure at which it is stored: psi gage at •F
	Type of liquid organic material (If the material is an organic liquid <u>other</u> than a gasoline, fuel oil, kerosene, crude oil, lubricant or other petroleum liquid, answer the question below.)
	Is it a photochemically reactive material? [] Yes [X] No
	Type of waste material (If the material is a waste, answer the question below.)
	Is it a hazardous waste? [] yes [] No If yes, identify type (EPA hazardous waste number)
	Indicate the year (or 12-month period) for item (g):
	Annual throughput of material: 1,250,000 gallons.

Storage Tank Emission Report Thursday, September 16 1993

11:03 AM

---- Tank Characteristics ----Identification T103 Identification No.: Dayton City: Ohio State: DOE-FEMP Company: Input Parameters Type of Tank: Vertical Fixed Roof Tank Dimensions Shell Height (ft): 12 Diameter (ft): 9 Liquid Height (ft): 12 Volume (gallons): 5800 216 Turnovers: 1250000 Net Throughput (gal/yr): Roof Characteristics Roof Type: Cone Roof Height (ft): 0.000 Slope (ft/ft): 0.00000 Dome Radius (ft): 0.00 Paint Characteristics Shell Color/Shade: Aluminum/Specular Shell Condition: Roof Color/Shade: Aluminum/Specular Roof Condition: Breather Vent Settings Vacuum Setting(psig): 0.00 Pressure Setting(psig): 0.00 ---- Storage Tank Contents Temperature Data ----Daily Average Ambient Temperature (Degrees Fahrenheit) = 51.90 Daily Minimum Ambient Temperature (Degrees Fahrenheit) = Daily Maximum Ambient Temperature (Degrees Fahrenheit) = 42.30 61.50 19.20 Daily Ambient Temperature Range = Solar Insolation Factor = 1160.00 0.39 Alpha (Shell) ≈ Alpha (Roof) = 0.39 53.24 Liquid Bulk Temperature (Degrees Fahrenheit) = Average Liquid Surface Temperature (Degrees Fahrenheit) = 56.22 Daily Maximum Liquid Surface Temperature (Degrees Fahrenheit) = 62.84

---- Storage Tank Vapor Pressure Information ----

Daily Vapor Temperature Range =

Daily Minimum Liquid Surface Temperature (Degrees Fahrenheit) = 49.60

26.49

Speciation Option: None

Chemical Liquid: Uranyl Nitrate

4792

Vapor Pressure of total mixture =	0.227238
Minimum Vapor Pressure of total mixture =	0.175816
Maximum Vapor Pressure of total mixture =	0.287205
Vapor Molecular Weight of Mixture =	18.000000
Vapor pressure range =	0.111389

--- Storage Tank Standing Loss Information (AP-42) ----Roof Outage = 0.00 0.00 Vapor Space Outage = Vapor Space Volume = 0.00 Vapor Density = 0.0007 Breather Vent Range = 0.000000 Vapor Space Expansion Factor = 0.044914 Vented Vapor Saturation Factor = 1.000000 Total Standing Losses = 0.00

---- Storage Tank Working Loss Information (AP-42) ---Net Throughput (gal/year) = 1250000
Liquid Volume (cubic feet) = 763
Turnovers = 219
Turnover Factor = 0.3037
Working Loss Product Factor = 1.00
Total Working Losses = 36.98

---- Storage Tank Total Losses (AP-42) ---- Total losses = 36.98 lbs/year

URANIUM EMISSIONS

The calculations for uranium emissions are based on known data where possible and where data for parameters is unknown or incomplete, conservative values producing a "worst case" condition for emissions are used.

The conditions used to determine uranium emissions from the tank are as follows:

- (1) At typical tank pressures and temperatures, the vapor pressure of the Uranyl Nitrate solution is equal to that of water.
- (2) Since uranium does not vaporize at storage conditions the only mechanism for uranium loss from the tank is by entrainment in the aerosol or mist generated during liquid storage and transfer.
- (3) Uranium emissions are determined by multiplying the amount of water lost from the tank by entrainment in the aerosol or mist generated during liquid storage and transfer by an emission factor determined from laboratory tests conducted on Lab sample D-37, Lab #2-9846.
- (4) The emission factor has been determined to be 6 x 10^{-06} gU/l of solution; the maximum concentration of uranium entrained in the vapor from a boiling solution of 9% uranyl nitrate as determined by the laboratory tests.
- (5) Maximum emissions are five times the calculated annual emissions.

These calculations are based on conservative estimates, the actual emissions are expected to be less than those indicated.

Annual Emissions:

36.98 lb water $| 6 \times 10^{-06} |$ lb U | = 2.22 E-7 | lb U/year

year

| 1000 | 1b water

Maximum Emissions:

2.22 E-7 lb U/year x 5 = 1.11 E-6 lb U/year

OHIO ENVIRONMENTAL PROTECTION AGENCY APPLICATION FOR A PERMIT TO OPERATE AN AIR CONTAMINANT SOURCE



D.O.EFernald E	nvironmental	Management	Mr. Stephen	M. Reckman	-699
Facility Name	MV II OHMEHOUL	Project	Person to C		· · · · · · · · · · · · · · · · · · ·
7400 Willey Road			Post Office	Box 398704	
Facility Address	 _		Mailing Add		
- 11		45000		011	45000 0705
<u>Fernald</u> <u>Ha</u> City	milton County	<u>45030</u> Zip	<u>Cincinnati</u> City	State	45239-8705 Zip
City	county	216	City	Jule	216
	513/ 738			513/ 7	38-6502
Telephone	Area	Number	Telephone		
•	#14311101	128-T104		4953	
(Application no.			lication)		Class. Code
Appendi Appendi Appendi Appendi Appendi Appendi	x A, Process x B, Fuel-Bur x C, Incinera x D, Surface Printing x E, Storage x H, Gasoline Facility x J, Loading Gasoline Terminal x K, Surface	rning Equipment tor Coating or Operation Tank Dispensing Rack at Bulk Plant or	AppendixAppendixAppendixAppendixAppendixAppendix	L, Solvent Cleaning ix M, Fugit Emissi Specify A N, Rubber Manufactu O, Dry Cle Facility P, Landfil pendix	Metal ive Dust on Sources ppendix No. Tire ring aning
2. Description		Printing Line me as used on	appendix): Pla		
3. Your identif	ication for S	ource (same a	s used on appe		
Administrativ source(s) des	ve Code, hereb scribed herein	by apply for a n. As require	in Rule 3745-3 Permit to Opera d, the followin ion (describe a Authorized S Kenneth L. M Vice Preside Title Date	ate the air of additional all attachments of the second se	contaminant l documents ents):

*Pursuant to OAC Rule 3745-35-02(B) (Permit to Operate).

Operation of an air contaminant source without an effective permit to operate is prohibited to 3704.05 Ohio Revised Code. Page 1 EPA-3161

		· · · · · · · · · · · · · · · · · · ·
FOF	R OFFICIAL USE ONLY	
Sou	emise No//_ urce No/ olication No/	<u> DOE - FEMP</u>
	4799	APPENDIX E-2 FEMP ID NO. 02-15 INORGANIC MATERIAL STORAGE TANK OR STORAGE TANK WITH CAPACITY LESS THAN 40,000 GALLONS
1.	Tank identificati	on: Name or number <u>F3E-405 (FEMP 2-154)</u> Date Installed <u>1952</u> (month/year)
2.	Tank capacity:_	5,800 gallons
3.	Tank shape: [X	Cylindrical [] Rectangular Spherical [] Other, specify
4.	Tank dimensions:	Diameter 9' Height 12' Length N/A Width N/A
5.	Tank shell materia	al: [] Steel [] Aluminum [X] Other, specify Stainless Steel
6.	Type of tank: [] [[] []	External floating roof tank Internal floating roof tank Fixed roof tank Vertical cylindrical tank Horizontal cylindrical tank Pressure tank Other, specify
7.	Location of tank:	[X] Outdoors [] Indoors [] Underground
8.	Type of filling:	[X] Splash [] Submerged [] Other, specify
9.	N/A: Stainless st	cated outdoors and above ground, provide the paint color of the tank. N/A eel tank, not painted specular) [] Light gray [] White diffuse) [] Medium gray [] Other, specify
	Condition of paint	: [] Good [] Poor N/A
10.	If this tank is of this item.	equipped with or vented to a vapor control system, complete (a) through (c)

Make or model Manufacturer Custom 1954 Date installed (month and year) _

a) Type of vapor control system Nitric Acid Recovery Tower

N/A

b) Date tank was equipped with or vented to vapor control system (month & year) _ N/A

c) Specify the rate of emission or percent control (by weight) for any pollutants being 88.9% (DATA PREVIOUSLY SUBMITTED) (Attach calculations and test data to support response, unless previously submitted)

0057

DOE - FEMP (Facility Name) F3E-405 (FEMP 2-154) (tank identification)

1.	. Complete the table b					•	
	Type of Vent Valve	Pressure Setting	Vacuum Setting	If pres <u>vapor contr</u>	sure relief <u>ol, identify</u>	is dischard	ged to a control.
2.	Operational Data (co stored. Attach addi	mplete (a) the	rough (g) of if necessary	this item fo	r all materi	als stored	or to be
	a) Material <u>Uranyl I</u> Density: <u>~10.5</u>	Nitrate lbs/gal or _	• API	Trade Name	N/A		·
	b) Temperature of stor (If temperature is	red material:	Average AM	B ∘F and Max	cimum AMB <	F	
(c) Vapor pressure of s is not known, write	stored materia e "unknown"):	al (Complete	i, ii, iii o	f this item.	If vapor	pressure
	i.) Actual vapor process (Aqueous Solute essentially was ii.) Reid vapor pres	ion ater)	0.29	psia at aver psia at max and minimum	imum storage	temperatur	е
	<pre>iii.) If material sto is stored: ps</pre>	ored is a gas si gage at	or liquified •F	l gas, provide	e the pressu	re at which	it
C	d) Type of liquid orga gasoline, fuel oil, k question below.)	nic material erosene, crud	(If the mate e oil, lubri	rial is an or cant or other	rganic liquid r petroleum	d <u>other</u> th a liquid, ans	n a wer the
	Is it a photochemical	ly reactive m	aterial? [] Yes [X	[] No		
е	e) Type of waste mater	ial (If the m	aterial is a	waste, answe	r the questi	on below.)	
	Is it a hazardous was If yes, identify type	te? [] yes (EPA hazardo	[] No us waste num	ber)		···	
f	f) Indicate the year	(or 12-month ;	period) for	item (g):	1983	·	
g	g) Annual throughput o	f material: <u>/</u>	2,500,000	g	allons.		
mpl	leted by <u>Ervin Fishe</u>	r, Jr.			Date Aug.	17, 1993	
					•		



Identification

--- Tank Characteristics ----

Storage Tank Emission Report Thursday, September 16 1993

11:03 AM

Identification No.: T104 Dayton City: State: Ohio DOE-FEMP Company: Input Parameters Vertical Fixed Roof Type of Tank: Tank Dimensions Shell Height (ft): 12 Diameter (ft): 9 Liquid Height (ft): 12 Volume (gallons): 5800 Turnovers: 216 Net Throughput (gal/yr): 1250000 Roof Characteristics Roof Type: Cone Roof Height (ft): 0.000 Slope (ft/ft): 0.00000 0.00 Dome Radius (ft): Paint Characteristics Shell Color/Shade: Aluminum/Specular Good Shell Condition: Roof Color/Shade: Aluminum/Specular Roof Condition: Good Breather Vent Settings Vacuum Setting(psig): 0.00 Pressure Setting(psig): 0.00 --- Storage Tank Contents Temperature Data ----Daily Average Ambient Temperature (Degrees Fahrenheit) = 51.90 Daily Minimum Ambient Temperature (Degrees Fahrenheit) = 42.30 Daily Maximum Ambient Temperature (Degrees Fahrenheit) = 61.50 Daily Ambient Temperature Range = 19.20 1160.00 Solar Insolation Factor = Alpha (Shell) =0.39 Alpha (Roof) = 0.39 Liquid Bulk Temperature (Degrees Fahrenheit) = 53.24 Average Liquid Surface Temperature (Degrees Fahrenheit) = 56.22 Daily Maximum Liquid Surface Temperature (Degrees Fahrenheit) = 62.84 Daily Minimum Liquid Surface Temperature (Degrees Fahrenheit) = 49.60 26.49 Daily Vapor Temperature Range = --- Storage Tank Yapor Pressure Information ----

```
Speciation Option: None Chemical Liquid: Uranyl Nitrate
```

Vapor Pressure of total mixture =	0.227238
Minimum Vapor Pressure of total mixture =	0.175816
Maximum Vapor Pressure of total mixture =	0.287205
Vapor Molecular Weight of Mixture =	18.000000
Vapor pressure range =	0.111389

--- Storage Tank Standing Loss Information (AP-42) ----Roof Outage = 0.00 Vapor Space Outage = 0.00 Vapor Space Volume = 0.00 Vapor Density = 0.0007 Breather Vent Range = 0.000000 Vapor Space Expansion Factor = 0.044914 Vented Vapor Saturation Factor = 1.000000 Total Standing Losses = 0.00

---- Storage Tank Working Loss Information (AP-42) ---Net Throughput (gal/year) = 1250000
Liquid Volume (cubic feet) = 763
Turnovers = 219
Turnover Factor = 0.3037
Working Loss Product Factor = 1.00
Total Working Losses = 36.98

---- Storage Tank Total Losses (AP-42) ---- Total losses = 36.98 lbs/year

URANIUM EMISSIONS

The calculations for uranium emissions are based on known data where possible and where data for parameters is unknown or incomplete, conservative values producing a "worst case" condition for emissions are used.

The conditions used to determine uranium emissions from the tank are as follows:

- At typical tank pressures and temperatures, the vapor pressure of the (1) Uranyl Nitrate solution is equal to that of water.
- Since uranium does not vaporize at storage conditions the only mechanism (2) for uranium loss from the tank is by entrainment in the aerosol or mist generated during liquid storage and transfer.
- Uranium emissions are determined by multiplying the amount of water lost (3) from the tank by entrainment in the aerosol or mist generated during liquid storage and transfer by an emission factor determined from laboratory tests conducted on Lab sample D-37, Lab #2-9846.
- The emission factor has been determined to be 6 x 10^{-06} gU/l of solution; (4) the maximum concentration of uranium entrained in the vapor from a boiling solution of 9% uranyl nitrate as determined by the laboratory tests.
- Maximum emissions are five times the calculated annual emissions. (5)

These calculations are based on conservative estimates, the actual emissions are expected to be less than those indicated.

Annual Emissions:

 $36.98 \ 1b \ water \ | \ 6 \ x \ 10^{-06} \ 1b \ U \ | \ = \ 2.22 \ E-7 \ 1b \ U/year$

vear

| 1000 | 1b water

Maximum Emissions:

2.22 E-7 1b U/year x 5 = 1.11 E-6 1b U/year

OHIO ENVIRONMENTAL PROTECTION AGENCY APPLICATION FOR A PERMIT TO OPERATE AN AIR CONTAMINANT SOURCE

4799

D.O.EFernald En Facility Name	vironmental Managemer Project	<u>nt</u> <u>Mr. Stephen</u> Person to C	M. Beckman
7400 Willey Road Facility Address		<u>Post Office</u> Mailing Add	Box 398704
<u>Fernald</u> Ham City	ilton 45030 County Zip	<u>Cincinnati</u> City	OH 45239-8705 State Zip
Telephone	513/ 738-6502 Area Number	Telephone	513/ 738-6502
	#1431110128-T106 if this is a renewal		4953 Std. Ind. Class. Code most appropriate to the
air contamina	nt source. In addition hen applicable. Chec	on, a compliance ti	me schedule form is to
Appendix Appendix Appendix	A, Process B, Fuel-Burning Equi C, Incinerator D, Surface Coating of Printing Operation	pment Append	L, Solvent Metal Cleaning ix M, Fugitive Dust Emission Sources
Appendix	E, Storage Tank H, Gasoline Dispensi Facility J, Loading Rack at B Gasoline Plant or	BulkAppendix	Specify Appendix No. N, Rubber Tire Manufacturing O, Dry Cleaning Facility
Appendix	Terminal K, Surface Coating Line or Printing	Other Ap	P, Landfills pendix ce Time Schedule
Accumulator Stora			ndix): FEMP # 13-004
Administrative source(s) desc	e Code, hereby apply f	or a Permit to Opera uired, the followin ication (describe a Authorized Kenneth L. Vice Preside Title	Signature Alkema ent Regulatory Programs
		<u>9/13/</u> Date	93

*Pursuant to OAC Rule 3745-35-02(B) (Permit to Operate).

Operation of an air contaminant source without an effective permit to operate is prohibited to 3704.05 Ohio Revised Code. Page 1 EPA-3161

FOR OFFICIAL USE ONLY 4799

Premise No.	///
Source No	_/
Application	No/

DOI	E - FEMP	
	(Facilit	y Name)
OEPA	NO 143111	0128 T106
	FEMP ID N	0. 13-004

APPENDIX E-2

INORGANIC MATERIAL STORAGE TANK OR STORAGE TANK WITH CAPACITY LESS THAN 40,000 GALLONS

1.	Tank identification: Name or number <u>F101 (FEMP 13-004)</u> Date Installed <u>1952</u> (month/year)
2.	Tank capacity: 7,833 gallons
3.	Tank shape: [X] Cylindrical [] Rectangular [] Other, specify
4.	Tank dimensions: Diameter 10' Height 16' Length N/A Width N/A
5.	Tank shell material: [] Steel [] Aluminum [X] Other, specify Stainless Steel
6.	Type of tank: [] External floating roof tank [] Internal floating roof tank [X] Fixed roof tank [] Vertical cylindrical tank [] Horizontal cylindrical tank [] Pressure tank [] Other, specify
7.	Location of tank: [X] Outdoors [] Indoors [] Underground
8.	Type of filling: [X] Splash [] Submerged [] Other, specify
9.	If this tank is located outdoors and above ground, provide the paint color of the tank. N/A Tank is not painted [] Aluminum (specular) [] Light gray [] White [] Aluminum (diffuse) [] Medium gray [] Other, specify
	Condition of paint: [] Good [] Poor
10.	If this tank is equipped with or vented to a vapor control system, complete (a) through (c) of this item. N/A
	a) Type of vapor control system Manufacturer Make or model Date installed (month and year)
	b) Date tank was equipped with or vented to vapor control system (month & year) N/A
	c) Specify the rate of emission or percent control (by weight) for any pollutants being controlled: (Attach calculations and test data to support response, unless previously submitted)

DOE - FEMP
(Facility Name)
F101 (FEMP 13-004)
(tank identification)

	Pressure Vacuum If pressure relief is discharged to a Type of Vent Valve Setting Setting vapor control, identify the vapor control.
2.	Operational Data (complete (a) through (g) of this item for all materials stored or to b stored. Attach additional sheets if necessary.)
	a) Material Rainwater/Spillwater Trade Name N/A Density: 8.34 lbs/gal or
	b) Temperature of stored material: Average <u>AMB</u> ·F and Maximum <u>AMB</u> · F (If temperature is approximately outdoor ambient temperature, write "AMB".)
	c) Vapor pressure of stored material (Complete i, ii, iii of this item. If vapor pressur is not known, write "unknown"):
	i.) Actual vapor pressure: (Aqueous Solution essentially water) ii.) Reid vapor pressure: Average psi and minimum-maximum psi
	iii.) If material stored is a gas or liquified gas, provide the pressure at which it is stored: psi gage at •F
	d) Type of liquid organic material (If the material is an organic liquid <u>other</u> than a gasoline, fuel oil, kerosene, crude oil, lubricant or other petroleum liquid, answer the question below.)
	Is it a photochemically reactive material? [] Yes [X] No
	e) Type of waste material (If the material is a waste, answer the question below.)
	Is it a hazardous waste? [] yes [] No If yes, identify type (EPA hazardous waste number)
	f) Indicate the year (or 12-month period) for item (g): <u>Jun 87 - Jun 88</u>
ı	g) Annual throughput of material: <u>500,000</u> gallons.
comp	Date Aug. 19, 1993

--- Tank Characteristics ----

Storage Tank Emission Report Monday, September 13 1993

9:17 AM

```
Identification
                            T106
   Identification No.:
   City:
                            Dayton
                            Ohio
   State:
                            DOE-FEMP
   Company:
Input Parameters
                            Vertical Fixed Roof
   Type of Tank:
Tank Dimensions
   Shell Height (ft):
                                    16
   Diameter (ft):
                                    10
                                    14
   Liquid Height (ft):
                                  7833
   Volume (gallons):
                                    64
   Turnovers:
                                500000
   Net Throughput (gal/yr):
Roof Characteristics
   Roof Type:
                             Cone
                             0.000
   Roof Height (ft):
                           0.00000
   Slope (ft/ft):
                              0.00
   Dome Radius (ft):
Paint Characteristics
                            Aluminum/Specular
   Shell Color/Shade:
   Shell Condition:
   Roof Color/Shade:
                            Aluminum/Specular
   Roof Condition:
                            Good
Breather Vent Settings
   Vacuum Setting(psig):
                             0.00
   Pressure Setting(psig):
                             0.00
---- Storage Tank Contents Temperature Data ----
                                                                   51.90
Daily Average Ambient Temperature (Degrees Fahrenheit) =
                                                                   42.30
Daily Minimum Ambient Temperature (Degrees Fahrenheit) =
                                                                   61.50
Daily Maximum Ambient Temperature (Degrees Fahrenheit) =
                                                                  19.20
Daily Ambient Temperature Range =
                                                                1160.00
Solar Insolation Factor =
                                                                   0.39
Alpha (Shell) =
Alpha (Roof) =
                                                                   0.39
Liquid Bulk Temperature (Degrees Fahrenheit) =
                                                                   53.24
Average Liquid Surface Temperature (Degrees Fahrenheit) =
                                                                   56.22
Daily Maximum Liquid Surface Temperature (Degrees Fahrenheit) = 62.84
Daily Minimum Liquid Surface Temperature (Degrees Fahrenheit) = 49.60
                                                                  26.49
Daily Vapor Temperature Range =
--- Storage Tank Vapor Pressure Information ----
```

Speciation Option: None Chemical Liquid: Sump Water

Vapor Pressure of total mixture = 0.430000
Minimum Vapor Pressure of total mixture = 0.430000
Maximum Vapor Pressure of total mixture = 0.430000
Vapor Molecular Weight of Mixture = 18.000000
Vapor pressure range = 0.000000

--- Storage Tank Standing Loss Information (AP-42) ---Roof Outage = 0.00
Vapor Space Outage = 2.00
Vapor Space Volume = 157.08
Vapor Density = 0.0014
Breather Vent Range = 0.000000
Vapor Space Expansion Factor = 0.037217
Vented Vapor Saturation Factor = 0.956407
Total Standing Losses = 2.85

---- Storage Tank Working Loss Information (AP-42) ---Net Throughput (gal/year) = 500000
Liquid Volume (cubic feet) = 1100
Turnovers = 61
Turnover Factor = 0.6602
Working Loss Product Factor = 1.00
Total Working Losses = 60.84

---- Storage Tank Total Losses (AP-42) ----Total losses = 63.69 lbs/year

0066

URAL TOME MISSIONS

The calculations for uranium emissions are based on known data where possible and where data for parameters is unknown or incomplete, conservative values producing a "worst case" condition for emissions are used.

The conditions used to determine uranium emissions from the tank are as follows:

- (1) At typical tank pressures and temperatures, the vapor pressure of the Rainwater/Spillwater is equal to that of water.
- (2) Since uranium does not vaporize at storage conditions the only mechanism for uranium loss from the tank is by entrainment in the aerosol or mist generated during liquid storage and transfer.
- (3) Uranium emissions are determined by multiplying the amount of water lost from the tank by entrainment in the aerosol or mist generated during liquid storage and transfer by an emission factor determined from laboratory tests conducted on Lab sample D-37, Lab #2-9846.
- (4) The emission factor has been determined to be 6 x 10^{-06} gU/l of solution; the maximum concentration of uranium entrained in the vapor from a boiling solution of 9% uranyl nitrate as determined by the laboratory tests.
- (5) Maximum emissions are five times the calculated annual emissions.

These calculations are based on conservative estimates, the actual emissions are expected to be less than those indicated.

Annual Emissions:

63.69 lb water | 6×10^{-06} lb U | = 3.82 E-7 lb U/year

vear

| 1000 | 1b water

Maximum Emissions:

3.82 E^{-7} 1b U/year x 5 = 1.91 E^{-6} 1b U/year

Alta Sales

OHIO ENVIRONMENTAL PROTECTION AGENCY APPLICATION FOR A PERMIT TO OPERATE AN AIR CONTAMINANT SOURCE

4799

D.O.EFernald Facility Name	<u>Environmental</u>	l Management Project	Mr. Stephen Person to C	M. Beckman	<u> </u>
7400 Willey Roa Facility Addres			Post Office Mailing Add	Box 398704	
-	lamilton County	45030 Zip	<u>Cincinnati</u> City	OH 4 State	15239-8705 Zip
Telephone	513/ 73 Area	88-6502 Number	Telephone	513/ 73	88-6502
(Application no		0128-T107 a renewal appl	ication)	4953 Std. Ind. C	lass. Code
air contami be attached AppendAppendXAppendAppendAppendAppend	nant source. when applica lix A, Process lix B, Fuel-Bu lix C, Inciner lix D, Surface Printing ix E, Storage ix H, Gasolin Facility lix J, Loading Gasoline Terminal ix K, Surface	erning Equipment rator c Coating or Operation Tank de Dispensing Rack at Bulk c Plant or	compliance ti appropriate tAppendixAppendixAppendixAppendixAppendixAppendixOther Ap	ime schedule he following L, Solvent Cleaning ix M, Fugiti Emissio Specify Ap N, Rubber T Manufactur O, Dry Clea Facility P, Landfill	form is to : Metal ve Dust n Sources pendix No. ire ing ning
Accumulator Sto	rage Tank F10	(same as used <u>O</u> Source (same as			
Administrat source(s) d	ive Code, here escribed herei	l specified in by apply for a R in. As required this applicati	Permit to Opera , the followin	ate the air cong additional all attachments of the second	ontaminant documents nts):

*Pursuant to OAC Rule 3745-35-02(B) (Permit to Operate).

Operation of an air contaminant source without an effective permit to operate is prohibited to 3704.05 Ohio Revised Code. Page 1 EPA-3161

FOR OFFICIAL USE ONLY

Premise No.	//
Source No	_/
Application	No/

DOE - FEMP (Facility Name) OEPA NO 1431110128 T107 FEMP ID NO. 13-003

APPENDIX E-2

INORGANIC MATERIAL STORAGE TANK OR STORAGE TANK WITH CAPACITY LESS THAN 40,000 GALLONS

1.	Tank identification: Name or number <u>F100 (FEMP 13-003)</u> Date Installed <u>1952</u>
	(month/year)
<u>.</u>	Tank capacity: 7.833 gallons
3.	Tank shape: [X] Cylindrical [] Rectangular [] Other, specify
4.	Tank dimensions: Diameter 10' Height 16' Length N/A Width N/A
5.	Tank shell material: [] Steel [] Aluminum [X] Other, specify Stainless Steel
6.	Type of tank: [] External floating roof tank [] Internal floating roof tank [X] Fixed roof tank [] Vertical cylindrical tank [] Horizontal cylindrical tank [] Pressure tank [] Other, specify
7.	Location of tank: [X] Outdoors [] Indoors [] Underground
8.	Type of filling: [X] Splash [] Submerged [] Other, specify
9.	If this tank is located outdoors and above ground, provide the paint color of the tank. N/A Tank is not painted [] Aluminum (specular) [] Light gray [] White [] Aluminum (diffuse) [] Medium gray [] Other, specify
	Condition of paint: [] Good [] Poor
10.	If this tank is equipped with or vented to a vapor control system, complete (a) through (c) of this item. N/A
	a) Type of vapor control system Manufacturer Make or model Date installed (month and year)
٠	b) Date tank was equipped with or vented to vapor control system (month & year) N/A
	c) Specify the rate of emission or percent control (by weight) for any pollutants being controlled: (Attach calculations and test data to support response, unless previously submitted)

6900

_ DOE	FEMP
(Facili	ty Name)
F100	(FEMP 13-003)
(tank-ide	nt 4 izen ien)

1.	Complete the table	below for any	pressure or	vacuum relief	vent valve. N/A	
	Type of Vent Valve		Vacuum Setting		ssure relief is di	
2.	Operational Data (c stored. Attach add				or all materials s	tored or to be
	a) Material <u>Rainwat</u> Density: <u>8.34</u>	er/Spillwater	407	Trade Name	N/A	
	Density: <u>8.34</u>	_ lbs/gal or	API	Producer	N/A	_
	b) Temperature of st (If temperature i				ximum <u>AMB</u> · F ture, write "AMB".)
	c) Vapor pressure of is not known, wri		al (Complet	e i, ii, iii o	f this item. If	vapor pressure
	i.) Actual vapor (Aqueous Solu essentially	pressure: tion water)	0.43	psia at ave psia at max	rage storage tempe imum storage tempe	erature erature
	ii.) Reid vapor pr		ge p	si and minimum	-maximum	psi
	<pre>iii.) If material s is stored:</pre>			ed gas, provid	e the pressure at	which it
	d) Type of liquid organization gasoline, fuel oil, question below.)	ganic material kerosene, crud	(If the ma de oil, lub	terial is an o ricant or othe	rganic liquid <u>othe</u> r petroleum liquid	er than a I, answer the
	Is it a photochemic	ally reactive m	naterial?	[] Yes [X] No	
	e) Type of waste mate	erial (If the m	naterial is	a waste, answ	er the question be	low.)
	Is it a hazardous wall If yes, identify ty	aste? [] ye: oe (EPA hazardo	s [] No ous waste n	umber)		
	f) Indicate the year	(or 12-month	period) for	r item (g): _	Jun 87 - Jun 88	<u> </u>
	g) Annual throughput	of material: _	500,000	9	gallons.	
omj	pleted by <u>Ervin Fis</u>	ner, Jr.			Date <u>Aug. 19.</u>	1993
·					-	· -

Storage Tank Emission Report Monday, September 13 1993

9:17 AM

```
--- Tank Characteristics ----
 Identification
   Identification No.:
                            T107
                            Dayton
   City:
   State:
                            Ohio
   Company:
                            DOE-FEMP
Input Parameters
                            Vertical Fixed Roof
   Type of Tank:
Tank Dimensions
   Shell Height (ft):
                                    16
                                    10
   Diameter (ft):
   Liquid Height (ft):
                                    14
                                  7833
   Volume (gallons):
                                    64
   Turnovers:
                                500000
   Net Throughput (gal/yr):
Roof Characteristics
   Roof Type:
                             Cone
                             0.000
   Roof Height (ft):
   Slope (ft/ft):
                           0.00000
   Dome Radius (ft):
                              0.00
Paint Characteristics
   Shell Color/Shade:
                            Aluminum/Specular
   Shell Condition:
                            Good
   Roof Color/Shade:
                            Aluminum/Specular
   Roof Condition:
                            Good
Breather Vent Settings
   Vacuum Setting(psig):
                             0.00
   Pressure Setting(psig):
                             0.00
---- Storage Tank Contents Temperature Data ----
                                                                   51.90
Daily Average Ambient Temperature (Degrees Fahrenheit) =
Daily Minimum Ambient Temperature (Degrees Fahrenheit) =
                                                                   42.30
Daily Maximum Ambient Temperature (Degrees Fahrenheit) =
                                                                   61.50
                                                                  19.20
Daily Ambient Temperature Range =
                                                                1160.00
Solar Insolation Factor =
Alpha (Shell) =
                                                                   0.39
Alpha (Roof) =
                                                                   0.39
Liquid Bulk Temperature (Degrees Fahrenheit) =
                                                                   53.24
                                                                   56.22
Average Liquid Surface Temperature (Degrees Fahrenheit) =
Daily Maximum Liquid Surface Temperature (Degrees Fahrenheit) = 62.84
Daily Minimum Liquid Surface Temperature (Degrees Fahrenheit) = 49.60
Daily Vapor Temperature Range =
                                                                  26.49
--- Storage Tank Vapor Pressure Information ----
```

Speciation Option: None Chemical Liquid: Sump Water

Vapor Pressure of total mixture = 0.430000
Minimum Vapor Pressure of total mixture = 0.430000
Maximum Vapor Pressure of total mixture = 0.430000
Vapor Molecular Weight of Mixture = 18.000000
Vapor pressure range = 0.000000

---- Storage Tank Standing Loss Information (AP-42) ---Roof Outage = 0.00
Vapor Space Outage = 2.00
Vapor Space Volume = 157.08
Vapor Density = 0.0014
Breather Vent Range = 0.000000
Vapor Space Expansion Factor = 0.037217
Vented Vapor Saturation Factor = 0.956407
Total Standing Losses = 2.85

---- Storage Tank Working Loss Information (AP-42) ---Net Throughput (gal/year) = 500000
Liquid Volume (cubic feet) = 1100
Turnovers = 61
Turnover Factor = 0.6602
Working Loss Product Factor = 1.00
Total Working Losses = 60.84

---- Storage Tank Total Losses (AP-42) ---- Total losses = 63.69 lbs/year

URANIUM EMISSIONS

The calculations for uranium emissions are based on known data where possible and where data for parameters is unknown or incomplete, conservative values producing a "worst case" condition for emissions are used.

The conditions used to determine uranium emissions from the tank are as follows:

- (1) At typical tank pressures and temperatures, the vapor pressure of the Rainwater/Spillwater is equal to that of water.
- (2) Since uranium does not vaporize at storage conditions the only mechanism for uranium loss from the tank is by entrainment in the aerosol or mist generated during liquid storage and transfer.
- (3) Uranium emissions are determined by multiplying the amount of water lost from the tank by entrainment in the aerosol or mist generated during liquid storage and transfer by an emission factor determined from laboratory tests conducted on Lab sample D-37, Lab #2-9846.
- (4) The emission factor has been determined to be 6 x 10^{-06} gU/l of solution; the maximum concentration of uranium entrained in the vapor from a boiling solution of 9% uranyl nitrate as determined by the laboratory tests.
- (5) Maximum emissions are five times the calculated annual emissions.

These calculations are based on conservative estimates, the actual emissions are expected to be less than those indicated.

Annual Emissions: year

63.69 | b water | 6 x 10⁻⁰⁶ | b U | = 3.82 E-7 | b U/year | 1000 | b water |

Maximum Emissions:

3.82 E^{-7} 1b U/year x 5 = 1.91 E^{-6} 1b U/year

OHIO ENVIRONMENTAL PROTECTION AGENCY APPLICATION FOR A PERMIT TO OPERATE AN AIR CONTAMINANT SOURCE

D.O.EFernald En Facility Name	<u>vironmental</u>	Management Project	Mr. Stephen Person to C	
·		FIOJECE		
7400 Willey Road Facility Address		· · · · · · · · · · · · · · · · · · ·	Post Office Mailing Add	
Fernald Ham	ilton	45030	Cincinnati	OH 45239-8705
City	County	Zip	City	State Zip
	513/ 738	3-6502		513/ 738-6502
Telephone	Area	Number	Telephone	
	#14311101			4953
(Application no.,	if this is	a renewal appl	ication)	Std. Ind. Class. Code
air contamina	nt source.	f the following In addition, a le. Check as	compliance ti	ost appropriate to the me schedule form is to me following:
Appendix Appendix	C, Incinera D, Surface	rning Equipment itor Coating or Operation		L, Solvent Metal Cleaning ix M, Fugitive Dust Emission Sources
<u>X</u> Appendix <u> </u> Appendix	E, Storage			Specify Appendix No. N, Rubber Tire Manufacturing
Appendix	Gasoline	Rack at Bulk Plant or	, .	O, Dry Cleaning Facility
Appendix	Terminal K, Surface Line or	Coating Printing Line	Other App	P, Landfills pendix ce Time Schedule
2. Description of	f Source (sa	me as used on a	appendix): <u>Met</u>	hanol Storage Tank
	cation for S ource (46-00	ource (same as	used on appen	dix):F4
I, being the Administrative source(s) desc	individual Code, hereb ribed hereir	specified in by apply for a P n. As required, this applicatio	ermit to Opera the following on (describe a Authorized S Kenneth L. A	of the Ohio te the air contaminant g additional documents ll attachments): Garage Signature Alkema nt Regulatory Programs
			9/13/9 Date	<u> </u>

Pursuant to OAC Rule 3745-35-02(B) (Permit to Operate).

Operation of an air contaminant source without an effective permit to operate is prohibited to 3704.05 Ohio Revised Code. Page 1 EPA-3161

1074 mai

1 of 5

EPA 3104> 0075

Condition of paint: [X] Good [] Poor

0. If this tank is an internal or external floating roof tank complete (a) through (g) of this item.
a) Type of floating roof: [] Double-deck [] Aluminum sandwich panel [] Pontoon [] Other, specify
b) Type of seal between floating roof and tank wall:
<pre>[X] Single seal (primary seal only) [] Dual seals (primary seal with secondary [] Single seal with weather shield seal mounted above it)</pre>
c) Primary seal information:
Manufacturer Altech Make or model Custom Fabricated Date installed 9/85 (month/year) [] Liquid-mounted, liquid-filled [] Liquid-mounted, resilient foam-filled [] Vapor-mounted, resilient foam-filled [] Mechanical shoe (complete item below) [X] Flexible wiper [] Other, specify
If the primary seal is a mechanical shoe, complete the following: Vertical length of shoe inches Vertical length of shoe above liquid surface inches
d) Secondary seal information: N/A
Manufacturer Type: [] Rim-mounted, flexible wiper Make or model [] Rim-mounted, resilient foam-filled Date installed [] Shoe-mounted (month/year) [] Other, specify
 e) Most recent seal inspection for visible holes, tears or other openings in the seal or fabric:
Seal(s) inspected Primary Seal Date of inspection March 26, 1993 Inspected by (person and company) Robert Duckworth & Leroy Pennington, FERMCO Condition of seal(s) [X] Good condition [] Needed repair or replacement, specify type and date of corrective action
f) Most recent seal gap measurements:
Primary Seal Secondary Seal
g) Condition of the interior side of the tank shell:
[X] Little or no rust [] Dense rust [] Gunite-lined

2 of 5

ė	4	799							•
11.	If this	∷is <mark>an int</mark> ∈	ernal floatin	g roof tan	k, comp	olete (a) t	hrough (f)	of this ite	m.
ä	a) Type	of roof abo	ve floating o	leck: []	Column	-supported	[X] Sel	f-supportin	g '
ŀ) If ro	of is colum	n-supported,	identify	the typ	e of column	construct	ion:	
	[] 9- [] 8-	inch by 7-i inch diamet	nch built-up er pipe colu	columns nns	[]	Other, ide Unknown	ntify		
C	;) Float	ing deck se	am constructi	on:					
	[X] We	lded	[] Bolted	[]	Other,	describe _			
C	l) If ded	ck seams ar	e bolted, com	plete (i)	or (ii): N/A			
	(i) [continuous s						
	[]		panel constr ft X 7.5 ft,						
	(ii) To: To:	tal length tal area of	of bolted dec floating dec	k seams: k:					ft. q. ft.
е			es to the lef the number, i				floating de	ck fittings	shown
	_1 Bo	olted cover nbolted cov	ually one) , gasketed er, gasketed er, ungaskete		_1_	Bolted cov Unbolted c	Float Well er, gaskete over, gaske	eted	ie)
	Ac	Supports (Lo djustable ixed	egs or Hanger	s		Sliding co	l (usually ver, gasket ver, ungask	ed	
	St	tub Drains	(1-inch diame	ter; not u	ised on	welded con	tact deck)		
	Bu Pi Pi	uilt-up col ipe column, ipe column,	umn, gasketed umn, ungasket flexible fab gasketed sli ungasketed s	ed sliding ric sleeve ding cover	cover seal				
	<u>1</u> \$1	lotted pipe lotted pipe	ell (usually , gasketed sl , ungasketed slit fabric	iding cove sliding co	ver	rea)			٠.
	We	eighted mecl	O-inch diame nanical actua nanical actua	tion, gask					
f	or li	id which is gauging or	on the float to be in a c sampling? [losed posi	tion a	t all times	except whe	n in actual	use f

•	a)	Type of shell construction: [] Welded [] Riveted $m{q}$	799
	s gau	· Are all openings in the external floating roof, except automatic bleeder vents, space vents, leg sleeves, main roof drains, emergency roof drains and slotted uging/sampling wells, equipped with both a cover, seal or lid without visible gaps projection into the tank below the liquid surface? [] Yes [] No	rim
		If no, explain	
	c)	Number of emergency roof drains Is each emergency roof drain equipped was a projection into the tank below the liquid surface and a slotted membrane fabror other device which covers at least 90% of the area of the opening [] Yes	ric cover
	d)	Is there a <u>slotted</u> gauging/sampling well? [] Yes [] No	
		If yes, is it equipped with an object which floats on the liquid surface within and which covers at least 90% of the well opening? [] Yes [] No	the well
13.]	If this tank is a lifter-roof tank or a fixed floor tank with a flexible diaphrag interconnected to any of those types of tank, complete the following: N/A	m or is
	a)	Volume capacity of vapor expansion system: gal or co	u ft.
	b)	Identify all tanks and other vapor sources interconnected to vapor expansion sys	stem
14.		If this tank is equipped with or vented to a vapor control system, complete (a) thr of this item. N/A	rough (c)
	a)	Type of vapor control system	
	man Dat	Type of vapor control system Make or model nufacturer Make or model te installed (month and year)	
	b)	Date tank was equipped with or vented to vapor control system (month & year)	
		Specify the rate of emission or percent control (by weight) for any pollutan	ts being
	con (At	ntrolled: ttach calculations and test data to support response, unless previously submitted))
15.	C	Complete the table below for any pressure or vacuum relief vent valve. N/A	
	Тур	Pressure Vacuum If pressure relief is discharge of Vent Valve Setting Setting vapor control, identify the vapor control.	
16.	. V	Complete (a) and (b) of this item if this tank is subject to the federal New Performance Standard under 40 CFR 60, Subpart Kb, "Standards of Performance for Vessels for Volatile Organic Liquids, including Petroleum Liquids Constructed After 1984"	Storage
	a)	Date of initial fill with petroleum liquid	
	•	Was tank out of service for a period of a year or more? [] Yes [X] No If yes, identify the date of subsequent refilling with petroleum liquid after the recent out-of-service period of a year or moreN/A	he most
		4 of 5	

If this is an external floating tank, complete (a) through (d) of this item. N/A

 Operational Data (complete (a) through stored. Attach additional sheets if n 	(j) of this item for all materials stored or to ecessary.)
a) Material <u>Methanol - 100%</u>	Trade Name <u>Methyl Alcohol</u> • API Producer <u>Not Known</u>
Density: <u>6.6</u> lbs/gal or	API Producer <u>Not Known</u>
b) Temperature of stored material: Ave (If temperature is approximately out	rage <u>AMB</u> ·F and Maximum <u>AMB</u> · F door ambient temperature, write "AMB".)
c) Vapor pressure of stored material (C is not known, write "unknown"):	omplete i, ii, iii of this item. If vapor press
i.) Actual vapor pressure:	1.17 psia at average storage temperature 1.17 psia at maximum storage temperature
ii.) Reid vapor pressure: Average	psi and minimum-maximum psi
<pre>iii.) If material stored is a gas or l is stored: psi gage at</pre>	iquified gas, provide the pressure at which it
 d) Type of liquid material (If the material kerosene, crude oil, lubricant or other 	rial is a liquid <u>other</u> than a gasoline, fuel oil r petroleum liquid, answer the question below.)
Is it a photochemically reactive mater	ial? [] Yes [X] No
e) Type of waste material (If the materi	ial is a waste, answer the question below.)
Is it a hazardous waste? [] yes [] If yes, identify type (EPA hazardous wa	X] No aste number)
f) Indicate the year (or 12-month perio	od) for item (g): <u>1992</u>
g) Annual throughput of material:	7865 gallons or barre
h) Percent annual throughput by season:	Winter <u>25</u> Spring <u>25</u> Summer <u>25</u> Fall <u>2</u> !
i) If this tank is a fixed roof tank, provided within the tank during the year:	rovide the average height of the stored material N/A feet.
	ystem or vents to a vapor expansion system, provie vapor expansion system for the year:
oleted by <u>Ervin Fisher</u> , Jr.	Date August 9, 1993

12:55 PM

Identification Identification No.: City: State: Company:	T127 Dayton Ohio DOE-FEMP	
Input Parameters Type of Tank:	Internal Floating Roof	
Tank Dimensions Diameter (ft): Volume(gallons): Turnovers: Number of columns: Column Diameter (in): Shell Condition: Paint Color/Shade: Paint Condition: Roof Color/Shade: Roof Paint Condition:	24 50000 1 0 0 Light Rust White/White Good White/White Good	
Rim-Seal System Primary Seal: Secondary Seal: Seal Fit:	Liquid-mounted	
Deck Characteristics Deck Type: Deck Fitting Category:	Welded Detail	
Daily Minimum Ambient Temp Daily Maximum Ambient Temp Daily Ambient Temperature Solar Insolation Factor = Alpha (Shell) = Alpha (Roof) = Liquid Bulk Temperature (D Average Liquid Surface Tem Daily Maximum Liquid Surfa Daily Minimum Liquid Surfa	erature (Degrees Fahrenheit) = erature (Degrees Fahrenheit) = erature (Degrees Fahrenheit) = Range = egrees Fahrenheit) = perature (Degrees Fahrenheit) = ce Temperature (Degrees Fahrenheit) ce Temperature (Degrees Fahrenheit)	51.90 42.30 61.50 19.20 1160.00 0.17 0.17 51.92 53.47 = 58.31 = 48.63 19.35
Daily Vapor Temperature Ra Storage Tank Vapor Pr Speciation Option: None Chemical Liquid: Methyl Al-	essure Information	13.33
Vapor Pressure of total mi	xture = 1.170407	

Monday, September 13 1993 Storage Tank Emission Report Page 2

```
Liquid Density:
                                               6.630000
Vapor Molecular Weight of Mixture =
                                              32.040000
---- Storage Tank Rim Seal Losses ----
Rim seal factor:
                                3.0000
Product factor:
                                1.0000
Vapor pressure function:
                                0.0207
                               47.84
Rim-seal losses:
---- Storage Tank Withdrawal Losses ----
Throughput (bbl):
                             1190.48
Clingage factor:
                                0.0015
Number of columns:
                                0
                                0.0000
Column Diameter:
Withdrawal losses:
                                0.47
Fitting: Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed
                   1.60
Factor:
Quantity:
Fitting: Automatic Gauge Float Well/Bolted Cover, Gasketed
                   5.10
Factor:
Quantity:
Fitting: Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover. Gask.
                  44.00
Factor:
                   1
Quantity:
---- Deck Fitting Losses ----
Fitting Category: Detail
Pressure function =
                                  0.0207
Vapor Molecular Weight =
                                 32.0400
                                 1.0000
Kc:
Deck Fitting factor:
                                 50.7000
Deck Fitting losses:
                                 33.69
Deck Seam losses:
                                  0.00
---- Storage Tank Total Losses (AP-42) ----
     Rim-seal Losses:
                                               47.84
     Withdrawal Losses:
                                                0.47
                                               33.69
     Deck Fitting Losses:
     Deck Seam Losses:
                                                0.00
     Total Losses:
                                               82.00 lbs/year
```

Maximum emissions are five times the calculated annual emissions.

TL * 5 = Max. emission 82 * 5 = 410 lbs/year maximum emission.

